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BULLETIN OF THE
U.S. DEPARTMENT OF AGRICULTURE

No. 21

Contribution from the Bureau of Animal Industry, A. D. Melvin, Chief.
January 15, 1914.

THE COMMERCIAL FATTENING OF POULTRY.

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INTRODUCTION.

The fattening experiments described in Bureau of Animal Industry Bulletin 140, entitled "Fattening Poultry," are continued in this bulletin, which represents the results of two more years' work covering the feeding seasons of 1911 and 1912. The methods and equipment at the four feeding stations are the same as described in the former bulletin, except for slight changes in equipment which are noted in this publication. The present experiments cover wider conditions and include larger numbers of birds than the previous work, and so permit of much better comparisons being made. The rations were varied at some of the stations, thus giving good comparisons of the value of different feeds under the same conditions; while the differences in equipment, methods, and rations at the various stations allow comparisons of results secured in several different ways.

The extent of the experiments, the numbers of birds included in each test, and the opportunity for comparison with the previous season's work eliminate largely the possibility of error that is liable to occur in dealing with small numbers, which give very variable results in fattening tests. The danger of deriving wrong conclusions by not properly allowing for the influencing conditions is also reduced to a minimum.

THE FEEDING EXPERIMENTS.

A full description of the four stations where the feeding was carried on will be found in Bulletin 140, before mentioned, as well as a number of other details concerning the equipment and methods of fattening in the large poultry packing houses of the Middle West which are not included in the present paper, as it is considered unnecessary to repeat them here.

The work of 1911 and 1912, herein described, is composed of four experiments, designated A, B, C, and D. These are summarized and

discussed in the following pages, and the complete details of each are recorded in Tables I to IV of the appendix at the end of the paper. The main object of the summary tables is to show the results according to length of feeding period, which varied from 6 to 21 days in Experiments A and D, from 9 to 18 days in Experiment B, and from 7 to 16 days in Experiment C. All the various kinds of birds are necessarily mixed together in showing these results, but the averages for two of the main classes—broilers and roasters—are shown separately, irrespective of length of feeding period, at the bottom of each table.

The actual cost of producing the gains in each case is given under each experiment, and as the price of grain and milk varied somewhat in the different localities, the relative amount of feed required to produce a pound of gain is used in comparing the efficiency of the rations and the methods at the different stations rather than the cost of the gains, except where different feeds are used.

PRICES OF THE FEED USED.

Before describing the feeding operations, the following list of average prices of the grain and buttermilk used is given:

TABLE 1.—*Average prices of grain and buttermilk used in the feeding experiments.*

Year.	Feed.	Experiment A.	Experiment B.	Experiment C.	Experiment D.
1911	Corn meal, per 100 pounds	$1.38	$1.32	$1.45	$1.35
1912	do	1.48	1.39	1.69	1.74
1911	Low-grade wheat flour, per 100 pounds	1.42	1.30	1.35	1.30
1912	do	1.50	1.38	1.45	1.52
1911	Oat flour, per 100 pounds		2.25		
1912	do		1.50		
1911	Shorts, per 100 pounds	1.25	1.30	1.28	1.30
1912	do	1.20	1.18	1.27	1.20
1911	Linseed meal, per 100 pounds			2.50	2.50
1911	Tallow, per 100 pounds		7.00		
1912	do		8.00		
1911	Buttermilk, per gallon		.02	.01	
1912	do		.02	.01	
1911	Condensed buttermilk, per gallon	.08		.08	.08
1912	do	.06			.08
1912	Graham flour, per 100 pounds				1.50
1912	Bone, per 100 pounds				3.25
1912	Meat, per 100 pounds	2.00		2.50	

EXPERIMENT A, 1911.

Most of the lots in this experiment at Station 3 were fed for a short time only during the first part of the feeding season, due to the lack of suitable equipment and space for fattening. The station was overcrowded twice during the season, which lowered the gains and increased the cost in both instances. The low, tin roof made the building too hot during warm weather, and produced a thick condensation of moisture on the inside of the roof in cool weather, when the building was partially closed. The gains, except for these two crowded periods, were fairly consistent throughout the season and

compare favorably with the results at the other stations. The cheapest gains were made on short-fed lots, but many of the lots could have been fed longer with profit if conditions had been good for fattening.

FEED.

A ration made up of equal parts, by weight, of corn meal and low-grade wheat flour was fed from the commencement of the season, July 23, until August 11, when shorts were added, making equal parts of corn meal, flour, and shorts up to September 7, at which time the ration was changed to 3 parts corn meal and 2 parts flour, which was fed to the end of the season. All of these rations were mixed with condensed buttermilk, diluted with one part of water, making a thick feed. It may here be stated that whenever "parts" are mentioned in connection with a ration, it means parts by weight, and "flour" always means low-grade wheat flour.

Each of the above rations produced good results, and no apparent change in gains occurred which could be attributed to the feed when the ration was changed. The heat at this station was at times very intense, which may have made the ration containing shorts preferable to the regular ration of 3 parts of corn meal and 2 parts of flour, but the results compared with those at Station 2 (Experiment D) do not indicate that there was any advantage in adding a large proportion of shorts to this feed, provided thick condensed buttermilk was used. Later in the season good results were secured on a ration of 3 parts of corn meal and 2 parts of low-grade flour without any shorts.

In this experiment the average cost of producing flesh was greater with broilers than with roasters, which was due to the unfavorable conditions in the house, particularly to the extreme heat in the first part of the season and to overcrowding later.

TABLE 2.—*Summary of Experiment A, 1911, Station 3, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
2,096	6	3.04	18.0	8.0	12.4	4.64	2.17	3.31
13,587	7	3.12	16.0	9.0	12.6	4.72	2.70	3.47
6,063	8	2.71	19.0	10.0	11.8	4.90	2.75	3.61
12,925	9	2.38	30.0	14.0	19.3	4.55	2.29	3.20
11,160	10	2.23	27.0	10.0	21.0	5.66	2.91	3.49
7,030	11	1.86	33.0	20.0	24.5	4.14	2.67	3.71
3,040	12	2.39	19.0	17.0	17.8	5.22	4.77	4.91
1,280	13	2.15	26.0	21.0	23.5	4.75	3.61	4.18
1,372	14	1.58	45.0	25.0	33.2	6.64	3.64	5.20
610	16	1.62	43.0	31.0	37.3	5.53	4.62	5.05
501	15	1.7	.....	.....	41.0	.....	.....	3.93
480	17	1.5	.....	.....	40.0	.....	.....	5.17
60,144	.....	2.47	.....	.....	18.6	.....	.....	3.62
10,153 broilers	.....	1.58	.....	.....	26.9	.....	.....	3.91
22,256 roasters	.....	3.15	.....	.....	13.5	.....	.....	3.56

TABLE 2.—*Summary of Experiment A, 1911, Section 3, arranged according to length of feeding period*—Continued.

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
2,096	10.96	3.82	7.38	1.72	0.77	1.18	12.68	4.59	8.56
13,587	10.93	6.24	7.99	1.53	.82	1.13	12.46	7.23	9.12
6,063	11.23	5.40	8.19	2.18	.91	1.41	12.73	6.46	9.60
12,925	9.29	5.49	7.00	2.60	.77	1.29	11.23	6.27	8.29
11,160	15.01	5.66	7.31	3.65	1.02	1.46	16.66	6.76	8.77
7,030	8.15	5.68	7.41	2.01	1.10	1.44	10.16	6.78	8.85
3,040	9.45	8.70	9.02	1.62	1.49	1.56	11.07	10.19	10.58
1,280	8.83	7.14	7.99	1.60	1.39	1.49	10.43	8.53	9.49
1,372	15.50	8.48	12.17	2.11	1.33	1.71	17.61	9.81	13.88
610	12.87	12.40	12.65	1.84	1.63	1.73	14.71	14.03	14.38
501	.....	.....	8.66	.....	.....	1.38	.....	.....	10.04
480	.....	.....	12.13	.....	.....	1.80	.....	.....	13.93
60,144	.....	.....	7.83	.....	.....	1.35	.....	.....	9.18
10,153 broilers	.....	.....	8.42	.....	.....	1.52	.....	.....	9.94
22,256 roasters	.....	.....	8.34	.....	.....	1.19	.....	.....	9.53

EXPERIMENT A, 1912.

The ration at Station 3 in 1912 was 3 parts of corn meal and 2 parts of low-grade wheat flour throughout the season, with 25 per cent of shorts added from August 21 to September 8 and with about 6 per cent of mixed feed added during September and November. The shorts and mixed feed gave fair results in warm weather, but no advantage was found when feeding them in cool weather. The specially prepared mixed feeds used in September cost $2.70 per 100 pounds and were too expensive, but a mixed feed used later in the season cost only $1.60 per 100 pounds, which compares favorably in price with the other feeds. However, it would probably be advisable to substitute shorts for mixed feeds, as the latter are more apt to be adulterated. Lot 2 was fed 10 per cent of meat in addition to the regular ration, while lot 45 was fed a specially prepared mixture to note the effect of these feeds on feather picking, but no consistent results were obtained in these experiments. This subject is discussed in detail under the heading "Feather picking."

Condensed buttermilk, diluted with water and mixed with grain—13.5 gallons to 100 pounds—was fed throughout the season. This proportion of condensed buttermilk, while increasing the cost of the feeding, gave profitable results, as the general conditions at this station were not conducive to good results in fattening. The proportion of condensed milk to grain was double that used in Experiment C. The broilers and roasters were separated at this station and fed for different lengths of time. The results secured during November were very poor, there being an increased cost of gain compared with 1911.

TABLE 3.—*Summary of Experiment A, 1912, Station 3, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
748	6	3.60	.....	.....	6.0	.....	.....	5.40
5,456	7	3.13	17.0	4.0	11.6	10.53	2.98	4.88
5,640	8	3.14	16.0	5.0	7.70	8.35	3.44	6.85
22,656	9	2.59	23.0	5.0	14.4	9.04	2.84	5.22
18,240	10	2.48	28.0	8.0	18.7	6.67	2.65	3.92
18,480	11	2.26	41.0	6.0	20.4	9.96	2.75	3.87
10,880	12	1.99	40.0	13.0	26.0	4.02	3.11	3.51
4,160	13	1.89	31.0	21.0	26.9	4.46	2.75	3.49
3,200	14	1.88	37.0	30.0	33.6	4.69	2.98	3.64
288	15	1.63	.....	.....	3.0	.....	.....	5.07
321	21	2.26	.....	.....	35.0	.....	.....	4.27
90,069	.....	2.44	.....	.....	18.6	.....	.....	4.42
10,852 broilers	.....	1.69	.....	.....	25.7	.....	.....	3.80
23,490 roasters	.....	3.24	.....	.....	9.2	.....	.....	6.83

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
748	.....	.....	9.60	.....	.....	1.91	.....	.....	11.51
5,456	19.35	5.42	9.13	4.02	1.06	1.79	23.37	6.55	10.92
5,640	15.77	6.63	12.87	3.11	1.15	2.44	18.88	7.78	15.31
22,656	17.46	5.48	9.81	3.43	.95	1.82	20.89	6.40	11.63
18,240	12.94	5.09	7.67	2.13	.84	1.31	15.07	6.11	8.98
18,480	19.29	5.56	8.78	3.78	.92	1.70	23.07	6.48	10.48
10,880	8.14	6.39	7.01	1.70	1.11	1.43	9.67	7.55	8.44
4,160	8.84	5.67	6.93	1.59	1.17	1.43	10.37	6.84	8.36
3,200	9.01	6.06	7.22	1.52	1.09	1.27	10.53	7.30	8.49
288	.....	.....	9.37	.....	.....	1.82	.....	.....	11.19
321	.....	.....	8.51	.....	.....	1.39	.....	.....	9.90
90,069	.....	.....	8.74	.....	.....	1.63	.....	.....	10.37
10,852 broilers	.....	.....	7.37	.....	.....	1.60	.....	.....	8.97
23,490 roasters	.....	.....	12.85	.....	.....	2.42	.....	.....	15.27

EXPERIMENT B, 1911.

The total number of chickens fed in this experiment at Station 1 was 102,684, the birds being divided into 113 lots, most of which were on feed from 12 to 16 days. The results secured were very satisfactory, the lots doing especially well until the month of October, when there was a marked falling off in gains. The feeding period was about 14 days until the gains fell off, when the period was shortened because the 14-day feeding was unprofitable, while the birds made as high or higher gains during a shorter feeding period. The "roasters" and "broilers" were not separated at this station, and all of the lots were classed as "springs" except a few in July when the average weight of the birds was under 1.8 pounds.

The equipment, management, and method of feeding at Station 1 are described in Bulletin 140. The ration was varied during the summer season in the following way:

FEED.

Lots 1 to 13 received a ration averaging 1 part shorts, 2 of low-grade flour, and 2.5 corn meal, but these proportions were varied somewhat. Lots 1 to 3 did not receive any tallow. In all the rest of the lots 6 per cent of the dry feed was tallow, although lots 4 to 17 did not receive tallow during their entire feeding period. The feed for all the lots was mixed in one tank at the same time.

Tallow increased the cost of gains considerably, but did not increase the gains in proportion to the extra cost. The tallow apparently increases the gains slightly and makes the fat appear more distinctly on the birds. Many buyers judge the condition of the birds partly by the prominence of this fat, so that it may be wise to feed a small proportion of tallow in some cases. Tallow was not fed at any of the other stations included in these records. These other companies had built up a reputation for such good poultry that they were able to sell their products as high, if not higher, than those produced by the company using tallow. On the whole there does not appear to be any advantage in feeding tallow at present prices except as it affects the appearance and the sale of the product, which depends both on the market and the reputation of the producer.

OAT FLOUR.

Lots 14 to 30 received 1 part of shorts, 1 of low-grade flour, and 1.5 parts of corn meal, with 6 per cent tallow. Lots 30 to 43 received equal parts of oat flour, low-grade wheat flour, and corn meal, which proved to be a very efficient ration, producing gains with slightly less feed but at a higher cost, because of the difference between the price of oats and of low-grade flour or shorts. Oats are one of the best fattening feeds and produce very good gains, but they do not equal low-grade wheat flour at the present price of grains. Oats which were ground and reground without removing the hulls were tried on a small scale toward the end of the feeding season with satisfactory results. Both hens and large chickens ate oats thus prepared without any ill effects, and made gains. It is possible that the hulls might injure young, tender chickens, but this can only be proved by feeding. If a feeder can procure reground oats containing hulls at a price not much greater than that of low-grade wheat flour they are one of the best feeds, as they produce a good quality of flesh and can be used efficiently in fattening poultry. A ration composed of one-fourth oats, one-fourth low-grade flour, and one-half corn meal would give very good results during the first part of the feeding season, and the proportion of corn meal could be gradually increased later in the season during cool or cold weather.

BEEF SCRAP.

Lots 44 to 70 received 1 part of shorts, 2 of low-grade flour, and 3.5 of corn meal, with 6 per cent of tallow. Lots 71 to 100 received 1 part of shorts, 3 of low-grade flour, and 10 of corn meal, with 6 per cent of tallow. Lots 101 to 113 received 1 part of shorts, 1 of low-grade flour, and 2 of corn meal, with 6 per cent of tallow. Lots 92, 94, and 95 received two-thirds of a pound of good quality dried meat scraps per 100 head, which amount of meat did not seem to affect either the gain or the cost of gain. The birds ate the feed well, but not any better than the lots which did not receive beef scrap.

There does not appear to be any advantage in adding beef scrap to the regular ration if it contains plenty of milk. Beef scrap would probably be economical in a ration without milk, or where only a small amount of milk was available. Fresh meat was added to the fattening rations at several other packing houses in this State. In these cases the poultry houses were a part of a meat-packing establishment, so that a supply of the best quality of meat was regularly available for feeding. Very good results were secured in feeding this meat in a ration containing 60 per cent of steel-cut oats, 40 per cent of corn meal, with about 7 per cent of tallow added.

TABLE 4.—*Summary of Experiment B, 1911, Station 1, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
1,350	10	3.50	.....	.....	9.0	.....	.....	4.63
1,800	11	3.40	17.0	7.0	12.0	6.86	2.83	4.85
10,884	12	3.10	31.0	9.0	17.7	5.67	2.40	3.71
17,100	13	2.69	48.0	8.0	24.9	6.72	2.01	3.18
43,200	14	2.60	49.0	9.0	26.2	8.23	2.12	3.28
14,850	15	2.48	41.0	11.0	28.8	6.03	2.40	3.23
9,900	16	2.04	48.0	25.0	33.3	4.18	2.57	3.17
3,600	17	1.75	47.0	33.0	37.5	3.55	2.93	3.29
102,684	.....	2.56	.....	.....	26.0	.....	.....	3.33
4,500 broilers	.....	1.62	.....	.....	42.8	.....	.....	2.79

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1,350	.....	.....	9.31	.....	.....	3.03	.....	.....	12.34
1,800	15.94	6.61	11.28	5.34	1.98	3.66	21.28	8.59	14.94
10,884	13.45	5.70	8.59	3.70	1.36	2.32	17.15	7.07	10.91
17,100	14.70	4.75	7.30	4.71	1.28	2.11	19.41	6.03	9.41
43,200	18.00	4.38	6.99	4.00	1.09	1.85	22.00	5.81	8.84
14,850	13.47	5.51	6.59	4.04	1.37	2.40	17.51	6.88	8.99
9,900	8.28	4.75	6.35	2.69	1.39	1.88	10.97	6.14	8.23
3,600	6.60	5.38	6.01	1.97	1.58	1.80	8.56	6.96	7.81
102,684	.....	.....	7.20	.....	.....	2.00	.....	.....	9.20
4,500 broilers	.....	.....	5.09	.....	.....	1.58	.....	.....	6.67

A study of Table 4 shows that the cost of gains increased as the season advanced, due both to the increased size of the birds and to less favorable weather conditions for fattening. The greatest and cheapest gains were made on small birds during the summer and early fall. Very hot weather increased the cost of gains slightly, while cold, cloudy, changeable weather in the fall raised the cost materially. Except for a few minor fluctuations, due to extremely hot weather, the cost of gains was comparatively steady during July, August, and September, after which time it increased quite rapidly. Broilers made the highest, cheapest gains. One lot of roasters (lot 82) which weighed 5 pounds to the bird gained only 9 per cent, while the total cost of a pound of gain was 11.97 cents. The average gain of the broilers was 42.8 per cent, and the average cost of gain 6.67 cents a pound. The lots containing the greatest per cent of light-weight chickens made the cheapest gains, while the average cost of gains varied inversely with the average weight of the lots.

The gain per 100 head in fattening may be shown in two ways—by the per cent of gain or by the gain in actual weight. The per cent of gain throughout the feeding season varies inversely with the average weight of the lots, so that a gain of 30 per cent on a lot averaging 1.5 pounds per head is no greater in actual pounds than a gain of 15 per cent on a lot of the same number of birds weighing 3 pounds per head. The total gain per 100 head is more constant throughout the feeding season, and on that account this method of recording gains is preferred by some companies, as the average weight of the birds does not have to be known when comparing the gains at different periods.

EXPERIMENT B, 1912.

The ration by months in 1912 at Station 1 was as follows: August, 1 part of shorts, 2 parts of low-grade wheat flour, 4 parts of corn meal, and 5 per cent of tallow, mixed with 72.5 per cent of buttermilk; September, 1 part of shorts, 2.5 parts of low-grade wheat flour, 4.5 parts of corn meal, and 5 per cent of tallow, mixed with 68 per cent of buttermilk; October and November, 1 part of shorts, 4 parts of low-grade wheat flour, 5 parts of corn meal, and 5 per cent of tallow, with 63 per cent of buttermilk. In general the proportion of shorts to low-grade wheat flour decreased, while the proportion of low-grade wheat flour to corn meal increased as the season progressed. This ration is quite similar to the one used during part of the season of 1911 at this station, and also to the one used in Experiment C at Station 4, except that it contains 5 per cent of tallow, which was not fed at Station 4. A much larger per cent of buttermilk was used in mixing the ration at this station than at Station 4 during the warm weather. This larger per cent of buttermilk appears to be especially advantageous in warm weather. A small amount of oatmeal, which was infested with

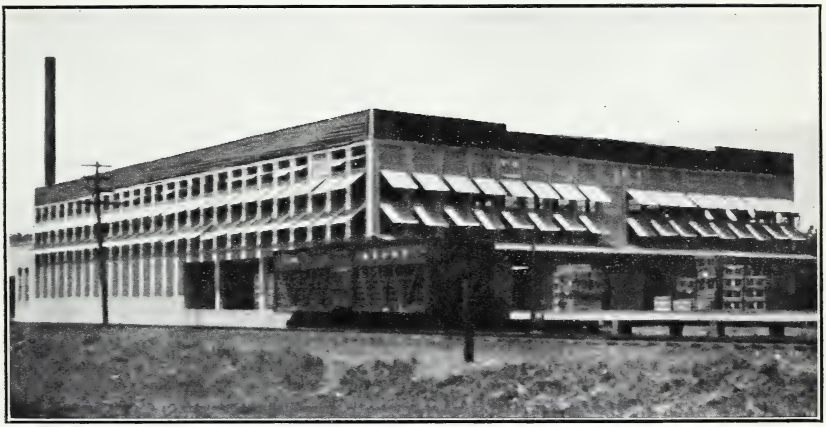


FIG. 1.—FEEDING STATION NO. 4, A WELL-EQUIPPED PLANT.

Note complete ventilation, easily controlled.

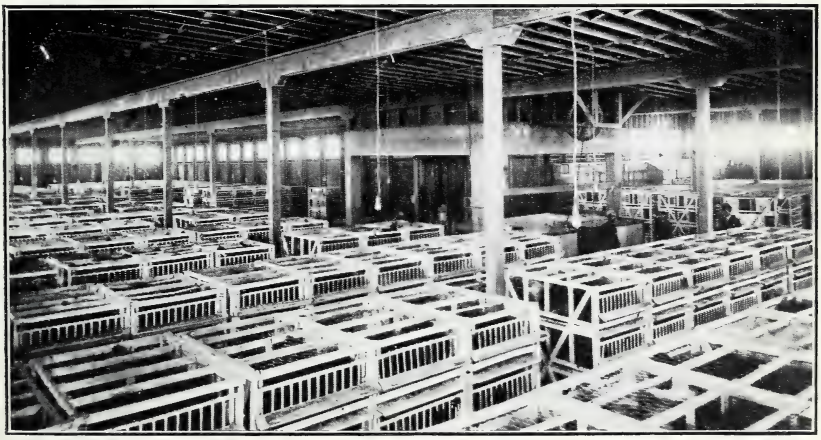


FIG. 2.—INTERIOR OF STATION NO. 4, SHOWING GENERAL ARRANGEMENT, FEED MIXERS, AND ELEVATOR

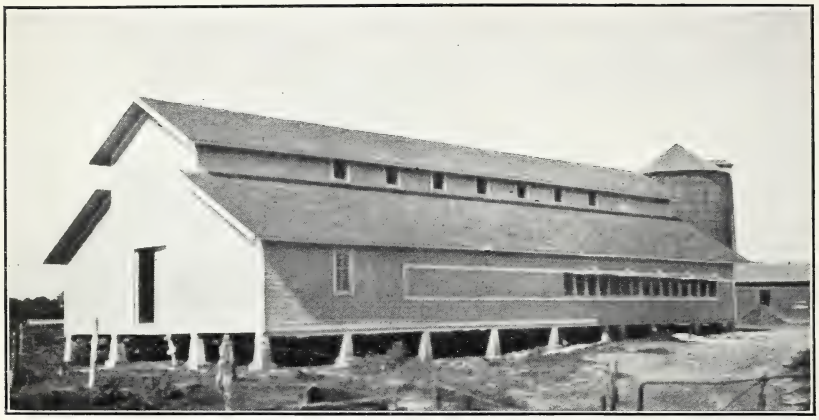


FIG. 1.—A SMALL FATTENING STATION WITH FEED ROOM IN THE REAR.

FIG. 2.—STATIONARY FEEDING BATTERY USED IN FEEDING STATION NO 1.

weevils, was bought at $1.50 per 100 pounds, and fed with good results to four lots in this experiment. Oatmeal gives slightly greater gains than low-grade wheat flour, but does not produce as economical gains at the present relative market prices of these two grains.

The broilers and roasters were not separated at this station, but the average cost of gain at this station would undoubtedly have been reduced after the middle of October if the lots had been fed for a shorter period. The longer feeding at that time of the year produced a better quality of flesh, but at a rather excessive cost compared with the cost earlier in the season on smaller chickens. No cripples or birds off feed were removed from the lots during this year, as has been the custom in previous seasons. The results for the season were very satisfactory.

TABLE 5.—*Summary of Experiment B, 1912. Station 1, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
900	9	3.60	.....	.....	7.0	.....	.....	5.74
5,400	10	2.73	28.0	4.0	13.7	10.19	2.36	5.59
2,700	11	2.55	34.0	10.0	19.7	5.00	1.94	3.49
5,400	12	2.52	31.0	14.0	22.2	4.55	2.35	3.24
17,100	13	2.10	51.0	14.0	30.1	5.35	1.89	2.90
27,900	14	2.22	52.0	10.0	29.6	7.38	2.07	3.32
10,800	15	2.51	35.0	15.0	23.4	5.37	2.83	4.04
10,800	16	2.57	34.0	19.0	25.3	4.25	2.69	3.84
5,400	17	2.43	45.0	22.0	29.7	4.31	2.69	3.69
3,600	18	2.34	38.0	32.0	34.8	3.56	3.12	3.39
90,000	.....	2.36	.....	.....	26.7	.....	.....	3.58

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
900	.....	.....	11.54	.....	.....	3.30	.....	.....	14.84
5,400	20.49	5.71	11.57	6.25	1.57	3.51	26.74	7.28	15.08
2,700	10.06	4.68	7.29	3.05	1.44	2.10	13.11	6.12	9.39
5,400	9.14	5.70	6.85	2.19	1.48	1.70	11.33	7.18	8.55
17,100	10.76	4.57	6.57	2.33	1.18	1.65	13.09	5.75	8.22
27,900	14.84	5.00	7.08	3.50	1.14	2.10	18.34	6.19	9.18
10,800	10.79	6.51	8.75	2.52	1.66	2.04	13.31	8.17	10.79
10,800	9.77	5.75	8.31	2.28	1.13	1.80	12.23	6.88	10.11
5,400	9.21	6.18	8.05	2.18	1.41	1.68	11.39	7.59	9.73
3,600	7.62	7.17	7.35	1.50	1.41	1.46	9.12	8.88	8.81
90,000	.....	.....	7.70	.....	.....	1.99	.....	.....	9.69

EXPERIMENT C, 1911.

This experiment was conducted at Station 4, of which exterior and interior views are shown in Plate I. The number of birds fed during the season totaled 117,151, which included 17,330 broilers and 55,010 roasters. The results for all the birds are summarized in Table 6 according to number of days fed, and the average results for the broilers and roasters, irrespective of length of feeding period, are shown separately as in the other experiments.

FEED.

A ration composed of about 1 part of shorts, 2 of low-grade flour, and 3 of corn meal was fed until August 12, when it was changed to 1 part of shorts, 1 of flour, and 2 of meal. On August 23 another change was made to 1 of shorts, 2 of flour, and 4 of meal, which was again changed on October 8 to 1 of shorts, 3 of flour, and 9 of meal, which was fed to the end of the season. The gains and cost were quite consistent, as the variation was due largely, if not entirely, to conditions other than feed. Chickens will use a larger per cent of corn meal more efficiently during cool weather, as the feeding season progresses. These records show a marked decrease in gains during the hot weather in August, and an extremely high cost of gains during November and December. The poor results obtained in August were due partly to overcrowding and perhaps partly to feeding a mixture which was too thick during the extremely hot weather.

TABLE 6.—*Summary of Experiment C, 1911, Station 4, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
3,326	7	3.22	8.0	3.0	4.6	10.82	5.18	9.03
6,140	8	2.90	25.0	8.0	13.6	5.40	1.96	3.91
9,830	9	3.01	18.0	5.0	12.2	9.43	3.12	4.79
15,342	10	2.91	25.0	3.0	14.5	14.76	2.31	5.13
16,864	11	2.75	37.0	9.0	18.9	7.22	2.42	4.06
32,493	12	2.43	34.0	5.0	19.6	30.56	1.49	4.85
10,802	13	1.88	39.0	12.0	25.0	5.86	2.69	3.79
17,298	14	1.84	50.0	17.0	33.0	5.69	2.25	3.25
5,056	15	1.99	44.0	25.0	29.5	4.41	3.23	3.55
117,151	.....	2.48	.....	.....	20.4	.....	.....	4.45
17,330 broilers		1.60	.....	.....	34.9	.....	.....	3.69
55,010 roasters		3.05	.....	.....	14.0	.....	.....	5.50

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
3,326	17.04	8.14	14.25	4.04	2.14	3.33	20.56	10.28	17.85
6,140	8.59	3.44	6.23	2.90	.76	1.45	11.49	4.20	7.68
9,830	15.94	5.48	7.74	4.80	1.20	1.92	19.84	6.68	9.66
15,342	28.27	3.92	8.19	9.03	.89	2.15	37.30	4.81	10.34
16,864	11.33	4.06	6.68	2.39	.89	1.43	13.72	4.95	8.11
32,493	49.00	3.84	7.91	13.52	.98	1.96	62.52	4.82	9.87
10,802	9.91	4.20	6.23	2.34	1.19	1.65	11.92	5.49	7.88
17,298	9.12	3.62	4.80	4.39	.98	1.54	13.04	5.29	6.34
5,056	7.08	5.77	6.04	1.65	1.23	1.50	8.58	7.03	7.54
117,151	.....	.....	7.15	.....	.....	1.81	.....	.....	8.96
17,330 broilers	.....	.....	5.98	.....	.....	1.63	.....	.....	7.61
55,010 roasters	.....	.....	8.83	.....	.....	2.12	.....	.....	10.95

Table 6 shows the common custom of separating roasters and broilers, feeding the former for short periods and the latter for a longer time. The broilers produced cheaper gains with less feed than the roasters, the average total cost per pound of gain being 1.89 cents less. Weather conditions were more favorable when most of the broilers were fed, which gives them an advantage over the roasters. Broilers fed during cool weather in summer produced the cheapest gains, but the gains later in the season, though cheaper than those produced by roasters, were much higher than earlier in the season, because a large number of the broilers were stunted and the weather conditions unfavorable.

The very marked increase in cost of gains in this experiment during November and December shows plainly the effect of weather conditions on the birds and the unprofitableness of feeding when this happens. It may be seen from Table III of the appendix that an unusually large proportion of dead birds are recorded in this experiment toward the close of the season. Comparing the results at this station with those obtained in Experiment D at Station 2, we find that the average gain and the amount of feed per pound of gain was the same for the season, while the cost was slightly greater at the latter station, due to the higher cost of the buttermilk. Condensed buttermilk diluted with 1½ parts of water was used in Experiment D, while the regular buttermilk, which was used in Experiment C, cost only 1½ cents per gallon. The proportion of corn meal in the ration was increased in cool weather without any injurious effects, but a study of the results indicates that a smaller per cent of corn meal in the ration produced cheaper gains.

EXPERIMENT C, 1912.

The ration at Station 4 in 1912 varied considerably during the season but on the whole was quite similar to that used in 1911, except that a smaller proportion of shorts was used throughout the season while a larger proportion of low-grade wheat flour was used during the latter part of the season. From 1 to 2 per cent of meat and bones was fed during the last half of June, throughout August and during the first half of September. The ration by months was as follows: July, 1 part of shorts, 3 parts of low-grade wheat flour, 6.5 parts of corn meal, mixed with 65 per cent of buttermilk; August, 1 part of shorts, 2 parts of low-grade wheat flour, 4 parts of corn meal, mixed with 67.5 per cent of buttermilk; September, 1 part of shorts, 4 parts of low-grade wheat flour, 7 parts of corn meal, mixed with 62 per cent of buttermilk; October, 1 part of shorts, 5 parts of low-grade wheat flour, 6.5 parts of corn meal, mixed with 62 per cent of buttermilk; November, 1 part of shorts, 6.5 parts of low-grade wheat flour, 11 parts of corn meal, mixed with 62 per cent of buttermilk.

The lots which averaged to weigh less than $1\frac{3}{4}$ pounds per bird were classed as broilers during the first part of the feeding season and the broilers and roasters were separated and fed different feeding periods after the 1st of October.

TABLE 7.—*Summary of Experiment C, 1912, Station 4, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
11,360	7	2.47	18.0	14.0	16.2	3.69	2.64	3.00
25,600	8	2.46	22.0	12.0	18.5	4.28	2.75	3.10
17,360	9	2.57	29.0	9.0	18.5	5.88	2.78	3.51
27,440	10	2.22	30.0	10.0	20.1	5.83	2.39	3.42
30,880	11	2.28	34.0	12.0	20.4	5.19	2.72	3.75
41,320	12	2.13	40.0	6.0	20.2	12.60	2.58	4.50
24,640	13	1.93	37.0	7.0	22.9	7.83	2.75	4.24
6,800	14	1.65	39.0	25.0	28.8	4.95	2.80	3.64
2,720	15	1.70	37.0	27.0	32.7	5.41	3.03	3.83
2,800	16	1.66	38.0	23.0	33.0	4.78	3.18	3.96
211,560	.....	2.21	.....	.....	20.7	.....	.....	3.72
43,120 broilers	.....	1.64	.....	.....	26.8	.....	.....	4.02
26,880 roasters	.....	3.10	.....	.....	11.7	.....	.....	5.73

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
11,360	6.39	4.67	5.33	1.05	0.82	0.89	7.44	5.49	6.22
25,600	7.64	4.84	5.49	1.21	.77	.88	8.85	5.61	6.37
17,360	10.47	4.88	6.22	1.85	.75	.99	12.32	5.63	7.21
27,440	9.73	4.18	6.13	2.10	.80	1.33	11.80	5.02	7.46
30,880	9.14	4.80	6.63	1.74	.88	1.31	10.73	5.68	7.94
41,320	23.89	4.62	7.93	6.37	1.01	1.75	30.26	5.63	9.68
24,640	13.80	4.93	7.54	2.52	1.04	1.68	16.32	6.01	9.22
6,800	8.09	5.03	6.51	2.91	1.09	1.55	10.30	6.12	8.06
2,720	9.64	5.52	6.92	2.36	1.70	2.14	11.34	7.88	9.06
2,800	8.52	5.82	7.20	2.87	1.47	2.12	11.34	7.78	9.32
211,560	.....	.....	6.61	.....	.....	1.37	.....	.....	7.98
43,120 broilers	.....	.....	7.25	.....	.....	1.74	.....	.....	8.99
26,880 roasters	.....	.....	9.78	.....	.....	1.89	.....	.....	11.67

EXPERIMENT D, 1911.

The results of this experiment at Station 2 were quite even throughout the season, except that during the month of November there was a marked increase and great variation in the cost of gains. The lots were handled like those in Experiment C, except that roasters were fed 7 or 8 days, while broilers were on feed 14 days. This method is open to criticism because cheaper gains are produced by gradually decreasing the length of the feeding period on roasters, reaching 7 or 8 days about the middle of October, than by changing from 14 directly to 7 or 8 days as soon as the lots are separated into roasters and broilers. However, much depends on the weather conditions, on the market, and on the economy of labor in the feeding station.

FEED.

The ration throughout the season consisted of 3 parts of corn meal, 2 parts of low-grade flour, and 5 per cent of shorts, mixed with condensed buttermilk diluted with 1½ parts of water. The results plainly show that these proportions of corn meal and flour make a very satisfactory ration throughout the feeding season. The condensed buttermilk undoubtedly offsets the corn meal in this ration during hot weather, so that it is more satisfactorily fed with thick condensed buttermilk than if mixed with the ordinary buttermilk.

TABLE 8.—*Summary of Experiment D, 1911, Station 2, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
9,174	6	3.31	9.0	2.0	7.4	14.31	3.45	5.25
14,670	7	3.20	13.0	2.0	9.2	16.74	3.15	5.58
35,462	8	2.96	19.0	8.0	13.4	6.24	2.68	3.93
11,012	9	2.89	22.0	7.0	14.8	6.96	2.62	4.01
5,570	10	2.40	25.0	12.0	20.1	4.92	2.72	3.35
2,172	13	2.21	37.0	28.0	29.7	4.09	2.89	3.11
15,230	14	1.94	42.0	19.0	30.4	5.54	2.85	3.82
11,810	15	1.97	41.0	23.0	30.2	5.13	2.92	3.71
3,340	16	1.97	32.0	26.0	27.4	4.21	3.73	4.10
1,360	17	1.80	.....	.....	37.0	.....	.....	3.38
109,800	.....	2.68	.....	.....	18.0	.....	.....	4.18
11,500 broilers	.....	1.79	.....	.....	36.9	.....	.....	4.27
71,928 roasters	.....	3.04	.....	.....	12.0	.....	.....	4.48

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
9,174	30.86	7.48	11.12	6.72	1.34	2.27	37.58	8.89	13.39
14,670	35.31	6.79	11.63	6.80	1.15	2.04	42.11	8.05	13.67
35,462	13.60	5.59	8.31	2.31	.95	1.40	15.37	6.54	9.71
11,012	14.47	5.26	8.51	2.50	1.01	1.44	16.97	6.27	9.95
5,570	10.13	5.31	6.77	1.81	.98	1.22	11.94	6.30	7.99
2,172	9.98	5.97	6.37	1.93	1.14	1.24	11.91	6.93	7.61
15,230	12.29	5.67	7.80	2.26	1.06	1.43	14.55	6.73	9.23
11,810	10.87	5.76	7.49	1.73	1.11	1.42	12.56	6.87	8.91
3,340	8.43	7.35	8.17	1.73	1.43	1.66	10.16	8.78	9.83
1,360	.....	.....	6.63	.....	.....	1.29	.....	.....	7.92
109,800	.....	.....	8.71	.....	.....	1.56	.....	.....	10.27
11,500 broilers	.....	.....	8.87	.....	.....	1.57	.....	.....	10.44
71,928 roasters	.....	.....	9.42	.....	.....	1.66	.....	.....	11.08

EXPERIMENT D, 1912.

The ration at Station 2 in 1912 was similar to that used in 1911, except that 2 to 3 per cent of bone and waste meat was fed at irregular intervals until the middle of September. A slightly larger (from 5 to 10) per cent of shorts was fed during 1912 after the middle of September, while this same per cent of a mixture of shorts and graham flour

was used up to that time. The supply of condensed buttermilk was very limited, so that it was necessary to dilute it with a larger per cent of water as the feeding season advanced. The amount of condensed buttermilk fed per 100 pounds of grain was as follows: 10 gallons in August, 7 gallons in September, 4.5 gallons in October, and 3.3 gallons in November. The rather poor results secured at this station during the last part of the season may have been partly due to this lack of buttermilk, but the results were quite variable throughout the entire season.

The cost of feed was considerably higher in 1912 than in 1911. The broilers and roasters were not separated at this station during this feeding season. The high cost of the gains during October on lots fed from 11 to 15 days would indicate that the common practice of dividing the lots into broilers and roasters about the 1st of October and gradually reducing the length of the feeding period of the latter was more profitable than to feed roasters for 14 days after the 1st of October.

TABLE 9.—*Summary of Experiment D, 1912, Station 2, arranged according to length of feeding period.*

Number of head.	Days fed.	Average weight.	Per cent of gain.			Grain per pound of gain.		
			High.	Low.	Average.	High.	Low.	Average.
		Pounds.	*Per cent.*	*Per cent.*	*Per cent.*	*Pounds.*	*Pounds.*	*Pounds.*
14,632	6	3.35	15.0	5.0	7.5	7.22	2.67	5.37
8,986	7	3.04	21.0	6.0	12.4	7.88	2.52	4.58
8,032	8	2.78	26.0	6.0	13.2	7.81	2.20	5.29
6,748	9	2.98	26.0	7.0	12.1	6.59	2.46	5.15
14,018	10	2.55	24.0	9.0	20.6	6.76	3.40	3.99
24,830	11	2.45	27.0	6.0	17.8	12.33	2.70	4.65
7,056	12	2.54	23.0	9.0	15.9	8.69	3.02	5.22
5,610	13	2.79	18.0	7.0	15.1	11.70	4.04	6.18
7,320	14	2.38	23.0	13.0	18.4	8.15	2.83	5.34
5,340	15	2.43	25.0	8.0	17.5	11.64	3.74	6.66
3,840	16	1.87	30.0	22.0	25.8	4.99	3.79	4.38
640	17	1.73	.....	.....	35.0	.....	.....	3.78
107,052	.....	2.69	.....	.....	15.7	.....	.....	4.98

Number of head.	Total cost of feed per pound of gain.			Cost of labor per pound of gain.			Total cost per pound of gain.		
	High.	Low.	Average.	High.	Low.	Average.	High.	Low.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
14,632	13.82	5.22	9.90	3.16	0.77	2.08	16.87	5.99	11.98
8,986	13.60	5.17	8.10	2.99	0.78	1.38	16.59	5.95	9.48
8,032	14.60	4.79	10.15	3.28	0.78	1.78	17.88	5.57	11.93
6,748	11.37	5.51	11.59	1.81	1.00	1.54	13.13	6.54	13.13
14,018	12.90	6.82	7.99	1.98	0.81	0.99	14.88	7.63	8.98
24,830	22.75	6.14	9.68	3.64	1.16	1.56	26.22	7.30	11.24
7,056	15.58	6.83	10.27	2.27	1.16	1.66	17.85	8.03	11.93
5,610	27.20	9.21	11.78	4.50	1.31	1.64	31.70	10.75	13.42
7,320	15.60	6.48	11.21	2.19	1.12	1.70	17.62	7.60	12.91
5,340	21.56	8.73	13.05	2.92	1.38	1.98	24.48	10.11	15.03
3,840	11.67	8.90	11.21	1.83	1.36	1.59	13.50	10.26	12.80
640	.....	.....	8.78	.....	.....	1.36	.....	.....	10.14
107,052	.....	.....	9.95	.....	.....	1.59	.....	.....	11.54

DETAILS CONCERNING THE FEEDING.

LENGTH OF THE FATTENING PERIOD.

No comparison can well be made from these tables between the lots fed different lengths of time. For instance, in Experiment B (Table 4) the 17-day lots show the cheapest gains, and the cost of gains happened to increase as the length of the feeding period decreased; but this was due either to the difference in the weight of the birds or to the time of the year when they were fed, and not to the number of days fed. The small birds were fed for the longer feeding periods and during the best weather for fattening, while the large birds were fed for the shorter periods, during the poorest part of the feeding season, which condition produced the cheapest gains on the lots fed for the longest feeding periods. The cost of gain on a given lot increases directly with the length of the feeding period.

In this experiment shortening the length of feeding earlier in the fall would undoubtedly have cheapened the cost of gain, but as the manager wanted to produce an especially fine quality of flesh, he considered it advisable to feed for the longer period while the chickens did well in the feeder. When the results showed that the lots were losing by being kept on feed 14 days, the period was shortened as quickly as possible without complicating the labor problem in the packing house. This shows the need of planning for the increased cost of gain in the fall, and preparing for it by shortening the length of feeding previous to the period of low gains, as the labor can not be handled economically if an abrupt change is made.

Again, in Experiment C the best length of feeding period can not be determined from a comparative study of the feeding, on account of a variation in the size of the birds and in the weather conditions for lots fed the same number of days. A comparison of the results at the various stations shows that the common practice of feeding broilers and springs for about 14 days during the first part of the feeding season and separating the lots of roasters and broilers about the middle of September, while gradually reducing the feeding period of the roasters, is the most profitable practice, unless there is a special reason for feeding the lots longer in the fall.

FEEDING TWICE AS AGAINST THREE TIMES DAILY.

Comparing the feeding results secured in Table 4 (Experiment B, Station 1) with those in the other tables, we find that the feed at this station was apparently more efficient than at any of the other stations. Practically the same gains were secured, both with less daily consumption of feed and less feed per pound of gain. Various factors might have influenced these results, but it would appear that by feeding twice instead of three times daily the grain was used more efficiently

in producing gains. At Station 1 during the greater part of the season the birds received a light feed in the morning and a heavy feed at night, thus getting the bulk of their feed in one meal. Some small tests in cramming, the results of which were not recorded, produced very good results by feeding only once daily. The advantage of feeding twice as against three times daily depends on other factors as much as on the efficiency of the use of feed, so that each feeder must decide that question for himself. Very good results can be secured by either method. There appears to be less danger of overfeeding when feeding only twice daily, but a more experienced feeder is required to regulate the amount to feed in two meals than in three in order to get the greatest amount of feed into the bird. Apparently under average conditions the birds will consume more feed in three meals daily, but will use their feed more efficiently if fed twice, provided that they receive enough feed.

THE USE OF CONDIMENTAL FEEDS.

A commercial preparation claimed by the manufacturers to stimulate the appetites of birds which are being fattened was fed in Experiment B to lots 1 to 12. Later in the season the test was repeated by feeding this preparation to lots 23 to 37. It did not appear to stimulate the birds' appetites, as the gains of other lots, fed before and after those which received this substance, did not show there was any advantage in feeding it.

Oil of aniseed mixed with pure carbolic acid, and fed at the rate of one tablespoonful to every 2,000 birds, had been used by one of the feeders in some previous work. It was claimed to have increased the appetite of the birds, but it made the bones brittle, so that its use prevented good dressing.

THE USE OF SALT AND GRIT.

Fine salt was fed in Experiments C and D at the rate of 4 pounds of salt to 10,000 head, without producing any apparent results. The feeders at these stations believed that salt in the feed kept the birds from picking each other, so that when this vice is prevalent it may pay to feed salt, otherwise there is no advantage in adding salt to the ration.

Grit was given to the birds in Experiment B twice weekly during the first month of the feeding season, but no grit was fed at any of the other stations. At the end of the month the feeding of grit was stopped without any apparent effect, and was not fed any more during the season. Birds in good health which are fattened not longer than 16 days do not need grit, as grit increases the cost of feed and labor without producing better gains.

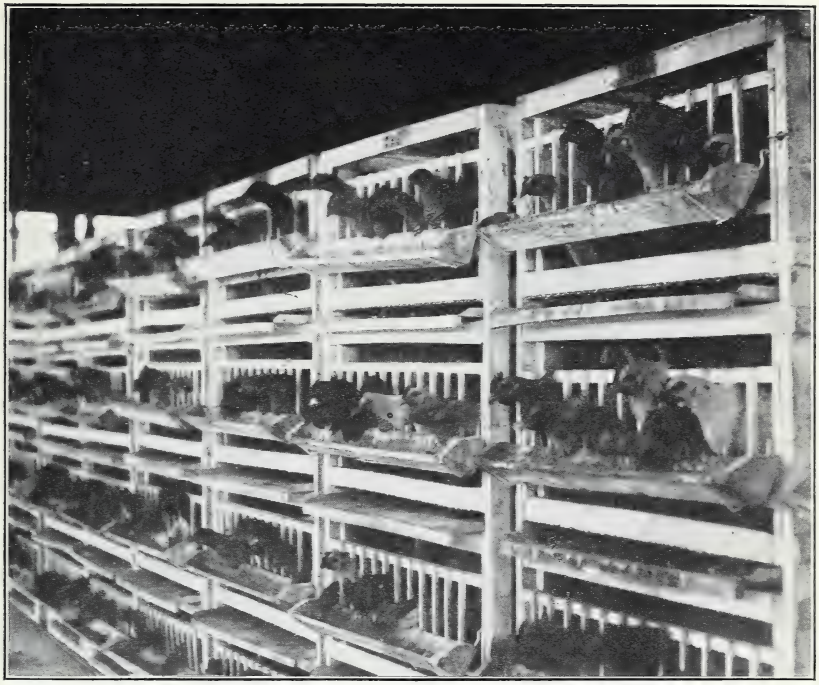


FIG. 1.—CHICKENS IN FEEDING BATTERIES WAITING TO BE FED.

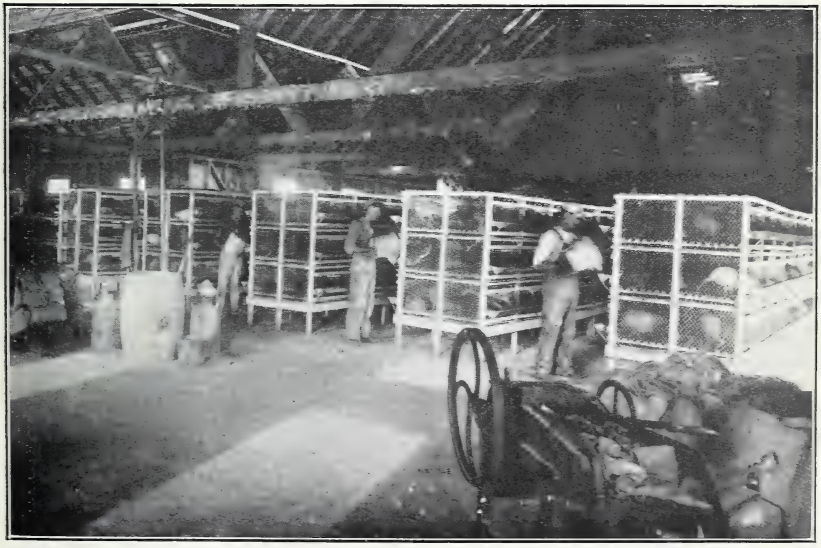


FIG. 2.—POURING THE FEED INTO THE TROUGHS.

THE EFFECT OF BUTTERMILK ON MOLTING.

The marked growth of feathers which occurs during a few days of fattening indicates that buttermilk and forced feeding tend to renew feathers rapidly. Chickens which do well in fattening are almost invariably covered with pin feathers, and this is an indication of good results in the feeder. Apparently a large amount of buttermilk in the feed greatly stimulates the growth of feathers, which fact might be noted in connection with the feeding of laying hens during the late summer to promote rapid molting and the growth of new feathers without forcing the birds.

THE BLEACHING EFFECT OF CONDENSED BUTTERMILK.

The No. 1 grade of poultry ordinarily sells for 1 to 2 cents more per pound than the third grade, so that a feeding mixture which will produce a greater per cent of the No. 1 grade has a commercial value. Buttermilk in the feed produces a bleach. An experiment was conducted at Station 4 to see whether the addition of condensed to ordinary buttermilk was profitable. One gallon of condensed buttermilk was added to 10 gallons of ordinary buttermilk from August 24 to September 18, and this test was repeated from October 4 to the 18th. The birds, as shown by Table III of the appendix, did not do well during the hot weather, which occurred about the middle of August. This is also shown in the grading reports. Condensed buttermilk was fed at this time and resulted in an immediate marked increase in the fancy grades of dressed poultry. This increase was greater than the relative increase in per cent of gain, showing that the increased consumption of buttermilk produced a larger per cent of fancy poultry, but when this condensed buttermilk was dropped out of the ration on September 18, the proportion of fancy poultry did not decrease. This would appear to show that the addition of extra condensed buttermilk was profitable only during warm or hot weather, and in fattening small birds. Condensed buttermilk was used entirely in mixing the feed at Stations 2 and 3, adding 1½ gallons of water to 1 gallon of the milk at Station 2 and equal parts of water and condensed buttermilk at Station 3. This large proportion of milk solids showed very marked results in producing a bleach in the poultry.

MISCELLANEOUS RATIONS.

A test in cramming chickens, conducted by the feeder at Station 1, on ground Georgia peanuts with buttermilk, produced unfavorable results. The feed was very laxative, and the chickens, though eating well, grew thin instead of fat. A ration containing about 6 per cent of peanut meal gave good results. The peanuts flavored the flesh and produced a peanut-fed chicken which sold at a special price, but the unfavorable effects of feeding a large per cent of peanut meal made this ration impractical.

A ration consisting of 60 per cent steel-cut oats, 40 per cent corn meal, with three-fourths of a pound of tallow and half a pound of fresh meat per 100 head daily, mixed with buttermilk, gave very good results, producing extremely fat chickens. The oats were soaked in buttermilk a couple of hours before feeding.

A test was made of cooked meal obtained by adding boiling water to corn meal and allowing this mixture to stand for 12 hours. Some condimental foods were added to this feed, and milk was kept before the birds during the day, but the results were not particularly satisfactory.

Another test was made with low-grade flour in place of the steel-cut oats, and this produced almost as high gains at $2 less cost per 100 head on feed. Table or cottonseed oil which cost 45 to 55 cents per gallon was tried in place of tallow. Chopped green alfalfa was added to the ration, but alfalfa has a tendency to color the flesh if fed up to killing time. None of these extra feeds appear to be either necessary or economical.

THE FEED AS AFFECTED BY CHANGES IN THE WEATHER.

The milk was heated before mixing with the feed at the different stations as soon as the weather turned cold in the fall. The consistency of the feed depends greatly on the weather. During hot weather the mixture should be made so that it will run rather than drip. In cooler weather it can be mixed with less milk to good advantage, but should drip freely. When thick condensed buttermilk is used, the feed can be mixed to a thicker consistency than with ordinary buttermilk. The monthly average of the per cent of buttermilk to total feed at Station 1 (Experiment B) was as follows: July, 67 per cent; August, 70 per cent; September, 68 per cent; October, 65 per cent, and November, 66 per cent. The daily variation in the per cent of milk was quite marked, especially in July and August.

NUMBER OF BIRDS IN EACH COMPARTMENT.

From 8 to 12 birds were placed in each compartment of the portable batteries at Stations 2, 3, and 4. Twelve birds were too many, as the birds scratched each others' backs through attempting to feed at the same opening. Ten birds gave good satisfaction at all of the stations, but 8 birds seemed to do better at Station 4 during hot weather. Ten birds in a compartment allows nine-tenths of a foot of floor space per bird in the battery. Later in the season, when the birds were larger, only 8 birds were placed in each compartment. Batteries of the size mentioned (2 feet 4 inches wide by 3 feet 10 inches long) will hold 80 broilers or medium-sized springs or 64 large springs or roasters without crowding, but in very hot weather it may pay to place only 64 head in each battery, if enough floor space is available.

REMOVING BIRDS "OFF FEED."

"Cripples" were removed from the batteries at Station 1 after October 26, which materially lowered the loss due to dead birds, but increased the cost of labor. These birds, if in good flesh, were dressed and their weight credited to their respective lots. The economy of this extra labor depends upon numerous conditions which are closely related. One reason for doing this at Station 1 and not at the other stations was that the birds were fed there for a longer time much later in the season than at the other stations. The conditions in the feeding station appeared to produce more sickly birds at Station 1 than at the others. If the chickens are carefully selected before they are put into the feeding station, so that no birds with colds or apparently out of condition go into the feeder, and they are only fed for a short period of 6 to 10 days under proper conditions of ventilation, it does not appear profitable to employ an extra man to remove "cripples." The regular help, however, must watch the birds carefully enough to prevent roupy conditions from spreading through the coops, although this is not likely to occur during the short feeding periods. Portable batteries placed a few inches apart keep the birds scattered so that any contagious disease will not spread as rapidly as in stationary coops or batteries.

FEATHER PICKING.

Two per cent of linseed meal was fed with the ration in Experiment D from September 1 to November 5. The linseed meal did not appear to affect the results of fattening in any way. The chickens during this period dressed particularly well, and it is possible that this linseed meal made picking easier, but its use would not be profitable for this purpose. The object of feeding linseed meal was to see if it had any effect on the habit of chickens picking each other. This vice caused considerable loss in fattening at times, but appeared to depend greatly on the condition of the chickens before they reached the packing house. Chickens which have not been well fed, or have been held for some time by the country merchant under poor conditions, are particularly subject to this vice, while in sections where the birds receive better care and are moved more quickly from the farm to the packing house, this habit does not cause any particular loss. Linseed meal added to the ration at Station 4 seemed to stop this vice, but the habit was not so widespread that a good test could be made. Either fresh meat or good beef scrap might prove of value where there was much loss due to this habit, but the remedy appears to lie largely in the use of better methods of handling the chickens before they reach the fattening stations.

Feather picking was more prevalent at all of the feeding stations in 1912 than it has ever been before. From 2 to 3 per cent of waste

meat and bones from local butcher shops was fed at Stations 2, 3, and 4 at irregular intervals during the season, but no consistent effect was noticed from this special feeding. Several lots at Station 3 were fed specially prepared mixed feeds which were claimed to prevent feather picking, but the results were inconsistent. The feather picking broke out during a period of cool weather, while the birds were eating ravenously, but stopped quite suddenly when the weather became warm and the birds were not so eager for their food. There appeared to be less loss due to this trouble where the largest per cent of buttermilk was fed in the ration, but feather picking can not be entirely controlled by regulating the proportion of buttermilk in the feed. Less heating rations, or those containing a large per cent of shorts and mixed feed and a small per cent of corn meal, make the best feeds for use in hot weather where feather picking is prevalent. The mixed feeds, however, produced chickens covered with small pin feathers, which resulted in a poorer grade of dressed product, and therefore made the feeding of the mixed feeds unprofitable as well as undesirable.

FATTENING HENS.

The results of fattening over 20,000 hens are shown in Tables 10 and 11, the feeding having been done at Stations 1, 2, and 4. All the lots were fed during November, 1911, and November and December, 1912.

The hens at Station 1 were fed coarse corn chop, or cracked corn with the meal left in, and 15 per cent of shorts, mixed with buttermilk. The shorts were added to facilitate mixing the feed, otherwise the corn chop would sink to the bottom of the mixer. The feed was mixed with considerable buttermilk and fed in a wet state.

The regular chicken mixture was fed to the hens at Stations 2 and 4, which, while producing slightly smaller gains, was apparently more efficient, as the average gain was produced with a pound less grain than with the corn chop, shorts, and buttermilk in 1911. It should be stated, however, that the increased cost of gain at Station 1 was due partly to the increased cost of buttermilk at this station, as the cost of grain in the rations was about the same, the regular chicken rations being slightly cheaper than the corn-chop ration. The comparative difference in cost of labor is due to the condition explained under Experiment B. A comparison of the results in 1912 does not show any marked advantage of one ration over the other

TABLE 10.—*Experiments in fattening hens, 1911.*

STATION 1.

Lot.	Number in.	Total weight in.	Average weight in.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Grain per 100 head.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
	Head.	*Pounds.*	*Pounds.*		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1	348	1,081	3.1	9	800	1,290	209	19.3	60	3.83	6.00	1.67	7.67
2	392	1,319	3.4	9	800	1,441	122	9.2	31	6.56	10.41	2.87	13.28
3	1,170	3,469	3.0	9	2,500	3,902	433	12.5	37	5.77	8.95	2.72	11.67
4	392	1,338	3.4	10	900	1,490	152	11.4	39	5.92	9.49	2.58	12.07
5	392	1,242	3.2	10	900	1,425	183	14.7	47	4.92	7.71	2.14	9.85
6	784	2,536	3.2	10	2,000	2,870	334	13.2	43	5.99	9.28	2.34	11.62
7	392	1,288	3.3	12	1,100	1,492	204	15.8	52	5.39	8.36	1.92	10.28
Average			3.17					13.4		5.61	8.77	2.41	11.18

STATION 4.

1	378	1,284	3.4	7	438	1,422	138	10.7	37	3.17	5.07	1.31	6.38
2	330	1,152	3.5	8	439	1,275	123	10.7	37	3.57	5.66	1.42	7.08
3	384	1,320	3.4	8	526	1,465	145	11.0	38	3.63	5.74	1.83	7.57
4	256	867	3.4	8	343	934	67	7.7	26	5.12	8.18	2.87	11.05
5	448	1,477	3.3	9	672	1,646	169	11.4	38	3.98	6.31	1.54	7.85
6	320	1,084	3.4	9	483	1,198	114	10.5	36	4.24	6.83	1.91	8.74
7	192	781	4.1	9	330	823	42	5.4	22	7.86	12.29	2.79	15.08
8	128	480	3.8	10	247	540	60	12.5	47	4.12	6.45	1.50	7.95
9	256	928	3.6	10	428	1,020	92	9.9	36	4.65	7.49	2.12	9.61
10	261	978	3.8	10	485	1,128	150	15.3	58	3.23	5.05	1.03	6.08
Average			3.51					10.6		4.16	6.61	1.77	8.38

TABLE 11.—*Experiments in fattening hens, 1912.*

STATION 1.

Lot.	Number of head.	Total weight.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Pounds.	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
1	450	1,427	3.17	Nov. 21 to Nov. 27.	7	554	1,581	154	11	34	10	3.60	6.15	2.12	8.27
2	450	1,466	3.26	Nov. 22 to Nov. 28.	7	538	1,566	100	7	22	15	5.38	9.20	3.11	12.31
3	450	1,460	3.24	Nov. 24 to Dec. 1...	8	475	1,571	111	8	25	13	4.28	7.32	2.19	9.51
4	450	1,454	3.23	.....do.....	8	474	1,593	139	10	31	7	3.41	5.83	1.73	7.56
5	450	1,407	3.13	Nov. 27 to Dec. 3...	7	574	1,569	162	12	36	25	3.54	6.06	1.90	7.96
6	450	1,500	3.33	Nov. 29 to Dec. 5...	7	627	1,569	69	5	15	5	9.09	15.54	4.67	20.21
7	450	1,443	3 21	Dec. 5 to Dec. 11...	7	529	1,565	122	8	27	11	4.34	7.41	3.28	10.69
8	450	1,390	3.09	Dec. 6 to Dec. 12...	7	529	1,529	139	10	31	13	3.81	6.50	3.41	9.91
9	450	1,366	3.04	Dec. 10 to Dec. 16..	7	611	1,562	196	14	44	9	3.12	5.33	2.14	7.47
Average			3.19						9.4			4.59	7.70	2.73	10.43

STATION 2.

				1912.											
1	1,500	5,871	3.91	Nov. 10 to Nov. 18.	9	3,030	6,387	516	9	34	31	5.87	10.67	2.35	13.02
2	1,080	3,990	3.69	Nov. 12 to Nov. 18.	7	1,685	4,400	410	10	38	17	4.11	7.30	1.71	9.01
3	360	1,324	3.68	Nov. 13 to Nov. 19.	7	551	1,511	187	14	52	2	2.95	5.08	1.12	6.20
4	780	2,915	3.74	Nov. 14 to Nov. 20.	7	1,154	3,148	233	8	30	14	4.95	8.40	1.74	10.14
5	960	3,655	3.81	Nov. 15 to Nov. 21.	7	1,344	4,002	347	10	36	7	3.87	6.45	1.30	7.75
6	1,020	3,910	3.83	Nov. 16 to Nov. 22.	7	1,428	4,199	289	7	28	10	4.94	8.08	1.45	9.53
7	1,140	4,695	4.12	Nov. 17 to Nov. 24.	8	1,813	5,070	375	8	33	5	4.83	7.69	1.22	8.91
8	1,040	3,937	3.79	Nov. 19 to Nov. 26.	8	1,550	4,259	322	8	31	13	4.81	8.46	1.20	9.66
9	1,020	3,847	3.77	Nov. 21 to Nov. 28.	8	1,714	4,084	237	6	23	19	7.23	10.89	1.68	12.57
10	780	2,909	3.73	Nov. 20 to Nov. 28.	9	1,482	3,044	135	5	17	12	10.98	16.99	2.54	19.53
Average			3.83						8.2			5.51	9.16	1.67	10.83

Corn chop and buttermilk were fed to hens held for live shipment during the summer months, but in very hot weather the birds did better on a ration of corn chop with 8 per cent of low-grade flour and 5 per cent shorts, which was less heating than the corn chop alone. These lots were only held for a short time in hot weather, and the object of feeding was to prevent shrinkage rather than to produce gains. Some lots showed a slight gain, others held their own weight, while a few showed a small shrinkage.

Corn chop is difficult to feed, as it can not be mixed with milk and poured from a feeding pail, so that the labor of feeding this ration is greater than with the other ration. The corn chop not mixed with other grains is fed by taking up a scoopful of grain and milk together, and stirring the mixture frequently to prevent the corn from settling in the mixing tank or feeding pail. If tallow is used in the chicken mixture, the corn-chop ration might prove as economical as the other ration. The regular chicken mixture prevents shrinkage better in hot weather, is cheaper, requires less labor, and produces slightly more economical gains in feeding hens than the corn-chop ration.

LESS PROFIT IN FATTENING HENS THAN IN FATTENING CHICKENS.

The average cost of the hens into the feeder was 7.7 cents a pound in 1911 and 10.3 cents in 1912, so that a pound of flesh can be bought more cheaply than produced in the feeding station. Therefore it only pays to feed hens under certain conditions. The object in feeding hens at Station 1 was to supply a trade for "milk-fed" hens and to dispose of the light hens, which are somewhat of a drug on the market in the ordinary grades of dressed fowl. At Stations 2 and 4 the light hens and those which were covered with small pin feathers were selected for fattening. The latter kind would grow feathers rapidly, so that they would dress as fancy poultry after a week or ten days fattening.

A comparison of the results secured in fattening hens at these three stations is shown in Tables 10 and 11. The feeding was done in November and December. The average cost of fattening the hens in 1911 was 10.92 and 8.74 cents per pound of gain at Stations 1 and 4, respectively, and 10.43 and 10.83 at Stations 1 and 2, in 1912. This is lower than the corresponding cost of fattening chickens at these stations during the same months, but higher than the average cost of fattening for the season. However, it may be stated that the cost for fattening chickens at Station 4 during the greater part of November (see Table III, appendix) was abnormally high. In general the difference in the cost, if any, would be more than made up in the selling price. Therefore, as hens are bought and sold at a considerably lower price per pound, it is, as a rule, much more profitable to fatten chickens than to fatten hens.

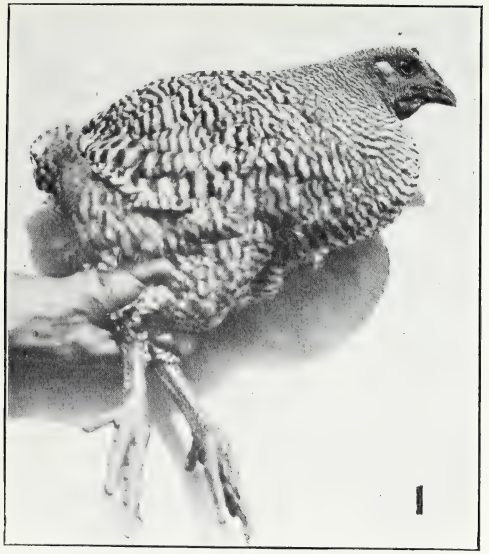
INDIVIDUAL VARIATION IN FATTENING CHICKENS.

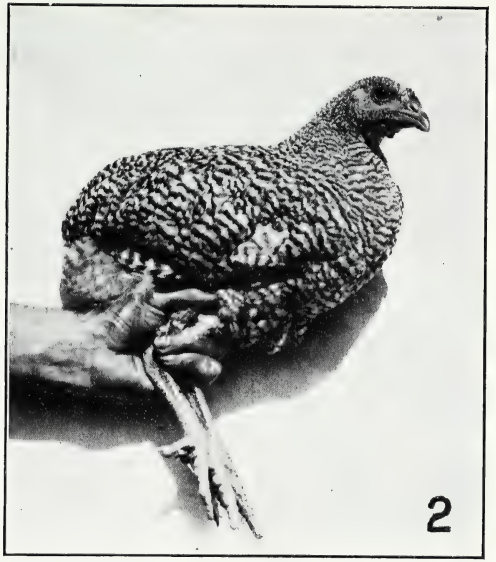
A study of Table 12 and of the variation in the summaries of the feeding experiments at the different stations shows that many factors affect the gains in fattening. Variation within a lot is due somewhat to the difference in the weight of the birds, but largely to the difference in the ability of the individuals to take on flesh under the existing conditions. This plainly shows how much variation exists in this ability to fatten readily, and the influence which the weather has in fattening. The possible error of conclusions drawn from small lots in fattening experiments is readily noted, and this possibility undoubtedly occurs under other poultry methods, as in the influence of feed and housing on the production of eggs. The marked effects of weather on fattening demonstrates the error which may occur in direct comparison of fattening tests conducted at different periods of the year, or in different seasons.

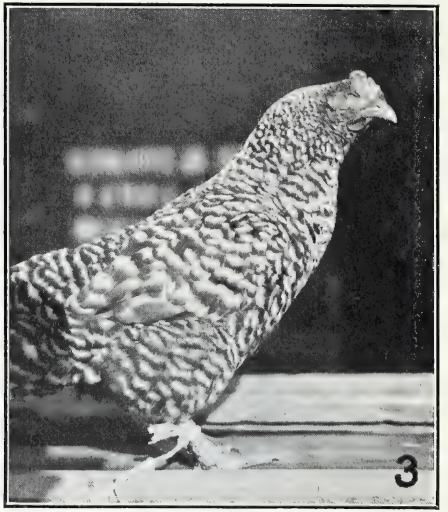
TABLE 12.—*Individual variation in fattening chickens.*

Number of head.	Kind.	Average weight.		Number of days fed.	Per cent gain.		
		High.	Low.		High.	Low.	Average.
		Pounds.	*Pounds.*		*Per ct.*	*Per ct.*	*Per ct.*
1,790	Roasters..	4.19	2.58	8	36.4	4.5	13
1,400	...do.....	3.07	2.53	8	25.9	7.6	14
1,216	...do.....	3.05	2.70	8	27.0	9.0	14
1,880	Springs....	2.03	1.43	15	55.0	17.0	27
1,080	...do.....	1.95	1.62	14	63.0	18.0	29
768	Broilers...	1.89	1.69	14	56.0	12.0	36
320	...do.....	1.75	1.23	14	45.0	36.0	39
600	...do.....	1.65	1.50	14	53.0	18.0	38
480	...do.....	1.76	1.40	14	39.0	31.0	35
320	...do.....	1.75	1.61	14	43.0	25.0	41
1,024	Springs....	3.55	2.72	11	29.0	7.0	18
512	Broilers...	1.47	1.34	15	63.0	31.0	44
1,088	Springs....	2.28	1.11	13	67.0	11.0	35
768	...do.....	1.58	1.47	14	45.0	30.0	37

In the above work individual records were kept of each battery containing 64 birds. The variation in average weight and in per cent of gains was between batteries of birds fed under the same conditions. The great variation in birds fattened under the same conditions suggests the economical possibility of rejecting certain birds in fattening. A very small per cent of birds called "rangers" were graded out of the receipts at Station 1 and killed without fattening. These birds consisted of black and feather legged stock, Leghorns, and birds out of condition. All black and feather legged birds were kept separate at Station 4 and fed only for a short period during the early part of the feeding season. Much better results could be secured in the fattening stations if only the best birds were selected for fattening, although this would require extra skilled labor for selecting, and involve a different and more complicated system of handling the birds at the packing house.







TYPES OF FEEDERS.

Fig. 1.—A very good feeder. Note the short, thick head. Fig. 2.—A poorer type of feeder. Note crow-like shape of head. Fig. 3.—A "cripple," or bird "off feed."

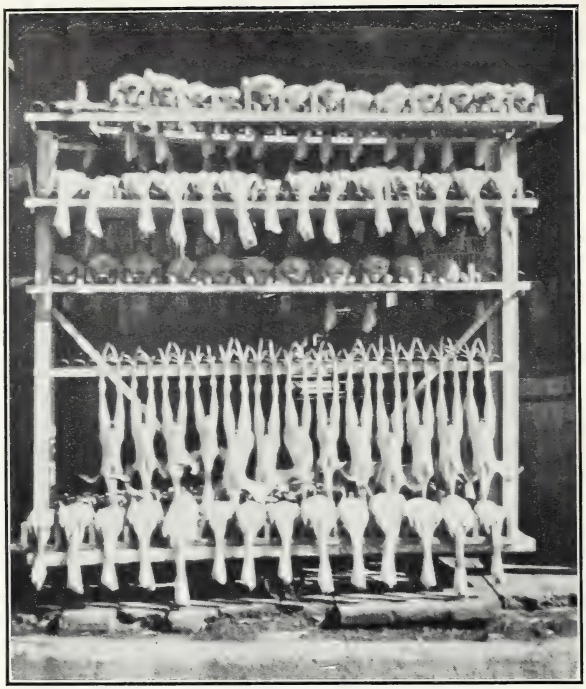


FIG. 1.—RACK FOR SQUATTED AND HANGING DRESSED POULTRY.

FIG. 2.—SPRAYING MACHINE, A LABOR-SAVING DEVICE.

MIXING MACHINES AND OTHER LABOR-SAVING DEVICES.

The horizontal mixing machine described in Bureau of Animal Industry Bulletin 140 was improved by adding one-third more blades. After this change had been made the feed was mixed more quickly, and the operator could put the dry grain directly into the feeder without previous mixing. Another mixer installed at Station 3 was made on the same plan as the previous machine, except that the blades were arranged as a spiral on the shaft so that in mixing the feed worked toward the center from either end. A mixing machine is a good investment when one is fattening a large number of chickens. The use of labor-saving mechanical devices in fattening stations has enabled one man to care for 4,000 to 5,000 birds. Results secured at these stations show that mechanical features can be used to good advantage in handling poultry commercially, provided the stations are kept clean. Mechanical features, besides saving greatly in the amount of labor, make it possible to use unskilled help in a fattening station. Similar features might be used to good advantage in handling poultry under commercial conditions other than fattening.

ADVANTAGE OF THE PORTABLE FEEDING BATTERY.

On comparing the results in 1911 at Station 1 (Experiment B), where stationary batteries were used, with those secured at the other stations, we find that the average pound of gain was produced with the smallest amount of feed (3.33 pounds) in this experiment, while the lowest cost of gain was made in Experiment C, due largely to the differences in the price of milk. The cost of labor (per pound gain) in Experiment B averaged considerably higher than at any other station. This increased cost was due to the method of handling the chickens, as the stationary feeding battery involves more handling of the birds than the portable feeding battery (described in Bulletin 140); also to the fact that the manager of this feeding station was a higher paid man than the other managers, and to the cost of an extra man employed to go through the batteries daily, or every day during the poor feeding season in October, November, and December, to remove all the birds "off feed" or sickly. The portable feeding battery unquestionably saves labor and eliminates some of the bruising of the birds caused by rehandling where stationary batteries are used.

EXPERT LABOR.

An expert manager, who is paid higher wages than the regular labor about a feeding station, is a necessity in the average feeding station, unless the manager of the packing house understands how to fatten chickens and watches the work closely enough so that he

can successfully direct ordinary help which shows some adaptability in feeding chickens and has had some experience in that work. Under ordinary conditions such help, if well selected and properly advised, may secure very good results; but in case of emergency, such as an over-supply of chickens, or extremely hot or cold weather, the expert manager easily proves his extra worth, as it is impossible for the manager of the average poultry house to always be on hand during such occasions. Conclusions drawn from the season's work show that in these cases the cost of the expert labor, combined with the different methods of handling the birds and the extra labor of picking out sick birds and "cripples," made the labor cost per pound of gain considerably higher than at any of the other stations, the average cost of labor per 100 pounds of gain at the stations being $1.41 at Station 3, $1.58 at Station 2, $1.75 at Station 4, and $2 at Station 1.

GRADING POULTRY.

Two grades of dressed poultry were made at Station 1—fancy, or No. 1, and choice, or No. 2—with a very small per cent of culls which are not included in these tables. The variation at this station for each successive 20 lots was as follows, the figures given representing the No. 2 grade: 7.9 per cent, 13.5 per cent, 13.4 per cent, 14.8 per cent, 14.7 per cent, 12.8 per cent.

Four grades were made at Station 4, classed as Nos. 1, 2, 3, and 4. The No. 1 grade included all fancy dressed poultry which plainly showed the effect of milk feeding, particularly a bleach, which is so characteristic of milk-fed poultry. The second grade was made up of well-bleached poultry, not as well fleshed as the first grade or which had undesirable market features, such as black or feathered legs, dark pin feathers, or not neatly dressed. The third grade included the well-fleshed birds, which were not well bleached, while the fourth grade bore the same relation to the third as the second did the first. The per cent of the several grades was as follows for each successive two weeks during the season: No. 1, 39, 25, 21, 35, 39, 45, and 24; No. 2, 9, 6, 5, 8, 10, 10, and 8; No. 3, 35, 44, 49, 35, 34, 38, and 13; and No. 4, 17, 25, 25, 22, 17, 7, and 55. The per cent of fancy grades varied directly with the per cent of gains in the feeding station, high gains producing a large per cent of the No. 1 grade.

SHRINKAGE IN DRESSING.

The shrinkage in killing and picking without drawing at Station 1 averaged 11.4 per cent for lots 1 to 20; 13.5 per cent for lots 21 to 40; 13.4 per cent for lots 41 to 60; 14.3 per cent for lots 61 to 80; 15.4 per cent for lots 81 to 100; and 15.1 per cent for lots 101 to 113. The lowest shrinkage was in the broilers, and gradually increased with

the size of the chickens as the feeding season advanced. Batteries weighed when received at the poultry house and reweighed the following morning before the birds were fed, gave an average shrink of 2 per cent. The shrinkage in killing and picking without drawing at this station in 1912 averaged 11.3 per cent for lots 1 to 20; 12.4 per cent for lots 21 to 40; 13.4 per cent for lots 41 to 60; 14.1 per cent for lots 61 to 80; and 14.6 per cent for lots 81 to 100. The shrinkage on hens was 12.9 per cent.

INITIAL COST OF CHICKENS AS AFFECTING PROFIT IN FATTENING.

The average cost per pound of the birds into the feeder in Experiment B in 1911 was as follows: Lots 1 to 12, 17.6 cents; lots 13 to 19, 15 cents; lots 20 to 30, 13 cents; lots 31 to 49, 12 cents; lots 50 to 63, 11 cents; lots 64 to 80, 10 cents; lots 81 to 108, 9 cents; and lots 109 to 118, 9.3 cents. The cost of picking, grading, and packing (including freezing) was about 7 cents per head. The gradual decrease of the average cost into the feeder is the reason for feeding longer early in the season, especially as the cheapest gains are made on these first lots; while later the flesh can be bought more cheaply than produced in fattening. For example, an average lot early in the season cost 17.6 cents per pound into the feeder, and the gain in fattening cost 7 cents per pound; an average lot late in the fall costs 9 cents per pound into the feeder, while the gain costs 10.5 cents per pound. The total cost per pound when dressed and packed for this first lot was 20.5 cents; for the other, 13.1 cents; but the first brought a much higher price in the market than the second. These costs were the average extremes of high and low cost, the total dressed costs gradually dropping as the season advanced. The average cost per pound of the birds into the feeding station in Experiment B in 1912 was as follows: Lots 1 to 21, 18 cents; lots 22 to 42, 16 cents; lots 43 to 57, 14.2 cents; lots 58 to 75, 11 cents; lots 76 to 100, 11.2 cents. Average cost per pound for the season 14.05 cents, as compared with 11.5 cents in 1911.

RELATION OF GRAIN FED TO MANURE PRODUCED.

Table 13 shows the average grain consumed and amount of manure produced daily per 100 head of chickens in fattening. This is a record of 900 head of birds at Station 1, Experiment B, kept from July 18 to November 16, 1911. These birds were fed a ration of 1 part shorts, 2 parts low-grade wheat flour, and 3 parts corn meal, by weight, with 6 per cent of tallow, mixed with ordinary buttermilk.

TABLE 13.—*Relation of production of poultry droppings and consumption of feed per 100 head.*

Dates.	Average grain daily per 100 head.	Average manure (wet) daily per 100 head.	Per cent of manure to grain.
1911.	*Pounds.*	*Pounds.*	*Per cent.*
July 18–31	12.5	12	96.0
Aug. 1–16	10.9	11	100.9
Aug. 17–31	14.3	11	76.9
Sept. 1–16	13.1	12	91.6
Sept. 17–30	15.4	19	123.4
Oct. 1–16	16.7	20	119.8
Oct. 17–30	16.2	17	104.9
Nov. 1–16	14.5	16	110.3
Average	14.2	14.7	103.5

The figures in the table vary considerably, although it may be stated that the amount of buttermilk in the feed affects the comparisons by increasing the amount of moisture in the droppings, especially during hot weather. The manure when weighed was soft and wet, so that the dry weight would be very much smaller. The birds eat more feed as they increase in size, especially during cool weather.

DIGESTIBLE PROTEIN AND ENERGY VALUES OF THE RATIONS.

The protein and the energy values of the various rations used in these fattening experiments show clearly the effect of thick condensed buttermilk, tallow, and oat flour in fattening. The following prices of grain and milk per 100 pounds were used: Corn meal, $1.35; low-grade wheat flour, $1.35; wheat shorts, $1.28; oat flour, $2.25; condensed buttermilk, $1; and ordinary buttermilk, $0.25. Farmers' Bulletin 346, United States Department of Agriculture, entitled "The Computation of Rations for Farm Animals by the Use of Energy Values," was used in deriving the protein and energy values of these feeds. Sixty per cent of the total feed was estimated as buttermilk in figuring the effect of the buttermilk on the energy value of the feed.

TABLE 14.—*Digestible protein and energy value per 100 pounds of rations used.*

Ration No.	Composition of rations (parts by weight).	Digestible protein.	Energy value.	Cost.
		Pounds.	*Therms.*	
1	5 parts corn meal, 2 parts low-grade wheat flour	8.31	86.41	$1.35
2	3 parts corn meal, 2 parts oat flour (bulls out)	8.36	87.08	1.71
3	3 parts corn meal, 2 parts low-grade wheat flour, 1 part shorts	9.06	84.95	1.34
4	4 parts corn meal, 2 parts low-grade wheat flour, 1 part shorts	8.74	85.50	1.34
5	2 parts corn meal, 1 part oat flour (bulls out), 1 part low-grade wheat flour	8.72	86.22	1.58
	100 pounds ration No. 1, with condensed buttermilk and diluted 1½ parts with water	19.71	117.33	1.95
	100 pounds ration No. 2, with ordinary buttermilk and 6 per cent tallow	14.26	114.59	2.40
	100 pounds ration No. 3, with ordinary buttermilk	14.76	100.41	1.71

Rations Nos. 1, 3, and 4 have a feeding value about equal to ration No. 2 at 36 and 37 cents less per 100 pounds, due largely to the price of oat flour. Ration No. 1 fed with condensed buttermilk diluted with one and one-half parts of water has a much higher feeding value than any of the other rations fed with ordinary buttermilk, at a slightly lower cost than ration No. 2. Rations Nos. 1 and 3 as fed proved in feeding to be the most economical rations, while ration No. 4 gave very good results in cool weather, late in the feeding season.

TABLE 15.—*Comparison of the different rations on the basis of the cost per pound of gain.*

Ration No.	Gain.	Grain.		Buttermilk.		Total cost.
		Amount.	Cost.	Amount.	Cost.	
	Pound.	*Pounds.*		*Pounds.*		
1	1	3.63	$0.049	[1] 2.72	$0.0272	$0.0762
2	1	3.33	.0676	4.99	.0125	.0801
3	1	4.17	.0559	6.27	.0157	.0716
1a	1	4.20	.0567	[1] 2.52	.0252	.0819

[1] Condensed.

Ration No. 1 was fed with condensed buttermilk diluted with 1 part of water, Nos. 2 and 3 were mixed with ordinary buttermilk, and No. 1a is ration No. 1 fed with condensed buttermilk diluted with one and one-half parts of water. Ration No. 2 was fed with 6 per cent of tallow. These costs are figured on a uniform price of milk and grains at all of the stations, while the costs of gains in each experiment is the actual cost at each feeding station, where the price of buttermilk and grain varied. The amount and cost of the grain and buttermilk per pound of gain at each of the feeding stations is given in Table 16.

COMPARISON OF EXPERIMENTS OF 1910, 1911, AND 1912.

Table 16 gives the average results of the feeding experiments covering three years at the four feeding stations, during which time 1,196,646 birds were fed. The lots in Experiment A were fed longer in 1911 than in 1910, which explains the increased cost of the gains during 1911. The ration in Experiment B was cheaper in 1911 than in 1910; the feeding station was run at full capacity during 1911, which reduced the labor cost compared with 1910, when the station was not full. The milk used in Experiment C was much cheaper than that in Experiment B, which lowered the cost of gains in Experiment C. The price of the grains was higher in 1912 than in 1911, especially in Experiments C and D, which increased the cost of gain. Feather picking resulted in much loss of gain in Experiments A, C, and D. The results secured in Experiment C were better, while those in Experiments A and D were not as good as those produced in 1911.

TABLE 16.—*Comparative data of feeding experiments of 1910, 1911, and 1912.*

Experiment.	Year.	Number of head.	Average weight.	Average per cent of gain.	Average grain per pound of gain.	Average cost of feed per pound of gain.	Average cost of labor per pound of gain.	Average total cost per pound of gain.
			Pounds.	*Per cent.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
A	1910	43,944	2.42	18.1	3.26	6.45	1.40	7.85
	1911	60,144	2.47	18.6	3.62	7.83	1.35	9.18
	1912	90,069	2.44	18.6	4.42	8.74	1.63	10.37
B	1910	61,706	2.82	18.7	3.26	7.74	2.59	10.33
	1911	102,684	2.56	26.0	3.33	7.20	2.00	9.20
	1912	90,000	2.36	26.7	3.58	7.70	1.99	9.69
C	1910	113,217		20.2				
	1911	117,151	2.48	20.4	4.45	7.15	1.81	8.96
	1912	211,560	2.21	20.7	3.72	6.61	1.37	7.98
D	1910	89,319		20.1				
	1911	109,800	2.68	18.0	4.18	8.71	1.56	10.27
	1912	107,052	2.69	15.7	4.98	9.95	1.59	11.54

CONCLUSIONS.

The average cost and the amount of feed consumed in fattening 394,744 chickens at the four feeding experiments in alphabetical order during the season of 1911 were, respectively, as follows: Grain per pound of gain, 3.62, 3.33, 4.45, and 4.18 pounds; cost of feed per pound of gain, 7.83, 7.20, 7.15, and 8.71 cents; total cost per pound of gain, 9.18, 9.20, 8.96, and 10.27 cents. The averages in 1912 for 498,681 chickens were: Grain per pound of gain, 4.42, 3.58, 3.72, and 4.98 pounds; cost of feed per pound of gain, 8.74, 7.70, 6.61, and 9.95 cents; total cost per pound of gain, 10.37, 9.69, 7.98, and 11.54 cents.

Tallow, while making the fat on the birds more pronounced, increased the cost of gains. Thick condensed buttermilk in place of tallow produced better results.

Oat flour produced greater gains than low-grade wheat flour, but the latter feed produced cheaper gains.

Beef scraps added to the buttermilk in a fattening ration did not increase the gain. The addition of condimental feeds did not increase the appetite of the birds or help the gains. Grit is of no value in fattening for any period under 15 days.

Under commercial conditions in the Middle West the best results are secured by fattening for about 14 days until the middle of September, and then gradually shortening the period to 6 or 7 days.

The birds ate more feed on three feeds a day but used feed more efficiently when fed only twice.

Mechanical labor-saving devices reduced the cost of fattening by reducing both the total amount of labor and the proportion of skilled labor required. The portable feeding battery turned out the birds in better condition and reduced the cost of labor per pound of gain.

Gains were produced at 1.89 and 1.41 cents, respectively, per pound cheaper in 1911, and 6.30 and 2.68 cents less in 1912 on broilers than on roasters, in two experiments.

There was great variation in the results secured in fattening. This was due to the difference in the ability of the birds to take on flesh, to their weight, and to the effect of weather conditions. The variation in birds makes their selection in fattening of considerable importance, if the labor of the extra work can be handled economically. The influence of the weather in fattening allows a chance of error in comparing fattening experiments conducted at different times.

The bleach produced by fattening with buttermilk varies according to the amount of milk solids consumed by the birds.

The average cost of fattening hens in November and December was 10.92 and 8.74 cents in 1911 and 10.83 and 10.43 cents in 1912, respectively, per pound of gain at two stations. This is higher than the average cost of fattening chickens for the entire season at the same stations but less than the cost of fattening chickens in November and December. Hens cost 7.7 cents per pound in 1911 and 10.3 cents in 1912, into the feeder, so that their flesh can be bought cheaper than produced at this time of the year. Cheaper gains were secured in fattening hens in 1911 on the rations used in fattening chickens than on a ration of corn chop with 15 per cent of shorts mixed with buttermilk.

Chickens cost 17.6 cents per pound into the feeder in July, 1911, while the gains cost 7 cents per pound at this time; in November, 1911, they cost 9 cents per pound into the feeder, and the gains cost 10.5 cents per pound. This influences the profit in fattening and the best length of time to fatten, making it advisable to feed longer in the first part of the season. The cost of picking, grading, and packing (including freezing) was about 7 cents per head, making the total average cost of a pound of dressed poultry in July, 20.5 cents, which gradually decreased through the season to 13.1 cents in November, 1911.

The best results were secured with the following three rations: No. 1, 3 parts of corn meal, 2 parts of low-grade wheat flour, and 1 part of shorts; No. 2, 3 parts of corn meal and 2 parts of low-grade wheat flour, and No. 3, 5 parts of corn meal, 3 parts of low-grade wheat flour, 1 part of shorts, and 5 per cent of tallow. The same feeding value is secured in a ration of 3 parts of corn meal and 2 parts of oat flour but at an increased cost of 37 cents per 100 pounds of gain. Four parts of corn meal, 2 of low-grade wheat flour, and 1 of shorts gave very good results during the latter part of the feeding season, or in cool weather; that is, the proportion of corn meal and low-grade wheat flour may be increased in cool weather.

APPENDIX.

Details of feeding experiments in 1911 and 1912.

EXPERIMENT A, STATION 3, 1911.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1911.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
1	Broilers	1,430	1,913	1.3	July 27 to July 31	11	1,916	2,409	496	26	35	20	3.86	7.87	1.52	9.39
2	do	560	714	1.3	July 23 to July 31	9	633	926	212	30	38	5	2.99	6.08	1.09	7.17
3	do	1,280	2,142	1.7	July 26 to Aug. 3	9	1,510	2,531	389	18	30	8	3.88	7.67	1.38	9.05
4	do	640	1,116	1.7	July 27 to Aug. 4	9	755	1,316	200	18	31	2	3.78	7.59	1.44	9.03
5	do	1,120	1,894	1.7	July 28 to Aug. 6	10	1,456	2,392	498	26	45	5	2.92	5.89	1.22	7.11
6	Springers	720	1,289	1.8	July 29 to Aug. 7	10	929	1,533	244	19	34	6	3.81	7.67	1.65	9.32
7	Broilers	960	1,660	1.7	July 30 to Aug. 7	9	1,114	2,018	358	22	37	7	3.11	6.27	1.39	7.66
8	do	640	958	1.5	July 31 to Aug. 10	11	832	1,174	216	23	34	9	3.85	8.15	2.01	10.16
9	Springers	800	1,398	1.8	Aug. 2 to Aug. 10	9	824	1,683	294	21	37	2	2.80	6.01	1.58	7.59
10	Broilers	560	905	1.6	Aug. 3 to Aug. 11	9	560	1,089	184	20	33	3	3.04	6.79	1.86	8.65
11	Springers	720	1,364	1.9	Aug. 4 to Aug. 13	10	792	1,504	140	10	19	11	5.66	13.01	3.65	16.66
12	do	640	1,194	1.9	Aug. 6 to Aug. 13	8	550	1,373	179	15	28	4	3.07	7.15	2.04	9.19
13	do	639	1,137	1.8	Aug. 8 to Aug. 15	8	543	1,322	185	16	29	2	2.94	7.15	2.18	9.33
14	do	556	1,051	1.9	Aug. 9 to Aug. 17	9	523	1,203	152	14	27	9	3.44	8.63	2.60	11.23
15	do	480	954	2.0	Aug. 12 to Aug. 20	9	499	1,142	188	20	39	2	2.65	6.61	1.76	8.37
16	do	800	1,522	1.9	Aug. 6 to Aug. 24	9	960	1,920	398	26	50	5	2.41	5.93	1.27	7.20
17	do	640	1,268	2.0	Aug. 17 to Aug. 27	11	1,005	1,616	348	27	54	3	2.89	6.91	1.43	8.34
18	do	560	1,056	1.9	Aug. 18 to Aug. 28	11	924	1,402	346	33	62	1	2.67	6.25	1.29	7.54
19	do	400	835	2.1	Aug. 22 to Aug. 31	10	664	1,035	200	24	50	3	3.32	7.40	1.52	8.92
20	do	560	1,110	2.0	Aug. 23 to Sept. 1	10	924	1,407	297	27	53	4	3.11	6.92	1.47	8.39
21	do	640	1,342	2.1	Aug. 26 to Sept. 4	10	1,056	1,638	296	22	46		3.57	7.50	1.53	9.03
22	do	560	1,195	2.1	Aug. 27 to Sept. 5	10	930	1,490	295	25	53		3.15	6.47	1.35	7.82
23	do	640	1,411	2.2	Aug. 31 to Sept. 12	13	1,344	1,783	372	26	58		3.61	7.14	1.39	8.53
24	do	640	1,417	2.2	Sept. 3 to Sept. 13	11	1,133	1,800	383	27	60		2.96	5.68	1.10	6.78
25	do	1,040	2,181	2.1	Sept. 6 to Sept. 15	10	1,602	2,705	524	24	50	6	3.06	5.94	1.21	7.15
26	do	720	1,574	2.2	Sept. 7 to Sept. 16	10	1,102	1,953	379	24	53	4	2.91	5.66	1.10	6.76
27	do	1,520	2,715	1.8	Sept. 8 to Sept. 18	11	2,538	3,333	618	23	41	17	4.11	7.77	1.52	9.29
28	do	720	1,592	2.2	Sept. 9 to Sept. 18	10	1,066	1,879	287	18	40	8	3.71	7.02	1.38	8.40
29	do	1,360	2,893	2.1	Sept. 10 to Sept. 19	10	2,067	3,489	596	21	44	13	3.47	6.53	1.28	7.81
30	do	640	1,338	2.1	Sept. 12 to Sept. 24	13	1,350	1,622	284	21	44	4	4.75	8.83	1.60	10.43

31	...do.....	720	1,631	2.3	Sept. 13 to Sept. 24...	12	1,411	1,924	293	18	41	6	4.82	8.99	1.62	10.61
32	...do.....	1,440	3,722	2.6	Sept. 15 to Sept. 26...	12	2,952	4,341	619	17	43	5	4.77	8.77	1.49	10.26
33	...do.....	1,600	3,739	2.3	Sept. 16 to Sept. 26...	11	3,024	4,469	730	20	46	24	4.14	7.65	1.27	8.92
34	...do.....	880	1,906	2.2	Sept. 17 to Sept. 28...	12	1,848	2,260	354	19	40	11	5.22	9.45	1.62	11.07
35	...do.....	720	1,790	2.5	Sept. 20 to Sept. 28...	9	1,152	2,043	253	14	35	4	4.55	8.14	1.37	9.51
36	...do.....	768	1,757	2.3	Sept. 22 to Sept. 28..	7	945	2,014	257	15	33	10	3.68	1.11	6.51	7.62
37	...do.....	640	1,851	2.9	Sept. 23 to Oct. 1....	9	1,011	2,157	306	17	48	2	3.30	1.09	5.71	6.80
38	...do.....	576	1,584	2.8	Sept. 24 to Oct. 1....	8	795	1,839	255	16	44	2	3.12	1.06	5.40	6.46
39	...do.....	644	1,792	2.8	Sept. 28 to Oct. 3....	6	689	2,109	317	18	49	0	2.17	.77	3.82	4.59
40	...do.....	1,320	3,741	2.8	Oct. 1 to Oct. 10.....	10	2,495	4,528	787	21	60	16	3.17	1.02	6.74	7.76
41	...do.....	640	1,810	2.8	Oct. 3 to Oct. 10.....	8	979	2,154	344	19	54	4	2.85	.91	6.34	7.25
42	...do.....	960	2,766	2.9	Oct. 4 to Oct. 11.....	8	1,450	3,294	528	19	55	4	2.75	.91	6.24	7.15
43	...do.....	832	2,434	2.9	Oct. 6 to Oct. 12.....	7	1,107	2,815	381	16	46	1	2.91	1.01	6.68	7.69
44	Broilers...	501	852	1.7	Oct. 1 to Oct. 15.....	15	1,388	1,205	353	41	70	10	3.93	1.38	8.66	10.04
45	...do.....	240	379	1.6	Oct. 5 to Oct. 18.....	14	622	550	171	45	71	0	3.64	1.33	8.48	9.81
46	...do.....	480	731	1.5	Oct. 6 to Oct. 22.....	17	1,498	1,021	290	40	60	7	5.16	1.80	12.13	13.93
47	Roasters..	960	2,862	3.0	Oct. 7 to Oct. 13.....	7	1,258	3,328	466	16	49	7	2.70	.99	6.24	7.23
48	...do.....	1,280	3,860	3.0	Oct. 8 to Oct. 17.....	10	2,342	4,464	604	16	47	7	3.88	1.46	9.16	10.62
49	Broilers...	320	473	1.5	Oct. 8 to Oct. 23.....	16	934	675	202	43	63	5	4.62	1.63	12.40	14.03
50	Roasters..	960	2,760	2.9	Oct. 11 to Oct. 19....	9	1,565	3,326	566	21	59	4	2.77	1.05	6.95	8.00
51	Broilers...	240	394	1.6	Oct. 11 to Oct. 24....	14	612	546	152	39	63	2	4.03	1.41	9.55	10.96
52	Roasters..	768	2,330	3.0	Oct. 12 to Oct. 20....	9	1,236	2,662	332	14	43	4	3.72	1.39	8.91	10.30
53	...do.....	768	2,365	3.1	Oct. 13 to Oct. 20....	8	1,091	2,666	301	13	39	6	3.62	1.35	8.70	10.05
54	...do.....	768	2,419	3.2	Oct. 14 to Oct. 22....	9	1,244	2,962	543	23	71	0	2.29	.78	5.49	6.27
55	...do.....	961	3,321	3.5	Oct. 15 to Oct. 23....	9	1,586	3,992	671	20	70	0	2.36	.77	5.64	6.41
56	...do.....	1,280	4,094	3.2	Oct. 18 to Oct. 24....	7	1,651	4,466	372	9	29	0	4.44	1.38	10.39	11.77
57	Broilers...	556	872	1.6	Oct. 18 to Oct. 31....	14	1,434	1,088	216	25	39	29	6.64	2.11	15.50	17.61
58	Roasters..	837	2,680	3.2	Oct. 19 to Oct. 25....	7	1,080	2,986	306	11	37	0	3.53	1.04	8.26	9.30
59	Broilers...	336	528	1.6	Oct. 20 to Nov. 2....	14	870	710	182	34	54	11	4.78	1.55	11.17	12.72
60	Roasters..	2,120	6,643	3.1	Oct. 20 to Oct. 26....	7	2,756	7,627	984	15	46	12	2.80	.82	6.51	7.33
61	...do.....	640	1,975	3.1	Oct. 21 to Oct. 29....	9	1,107	2,250	275	14	43	1	4.03	1.23	9.29	10.52
62	...do.....	1,840	5,488	3.0	Oct. 22 to Oct. 29....	8	2,815	6,063	575	10	31	22	4.90	1.50	11.23	12.73
63	Broilers...	290	513	1.8	Oct. 22 to Nov. 6....	16	879	672	159	31	55	2	5.53	1.84	12.87	14.71
64	Roasters..	1,470	4,596	3.1	Oct. 24 to Oct. 30....	7	1,940	5,219	623	14	42	38	3.11	1.01	7.17	8.18
65	...do.....	1,020	3,259	3.2	Oct. 25 to Oct. 31....	7	1,316	3,538	279	9	27	26	4.72	1.53	10.93	12.46
66	...do.....	1,170	3,725	3.2	Oct. 26 to Nov. 1....	7	1,509	4,100	375	10	32	22	4.02	1.41	9.39	10.80
67	...do.....	748	2,315	3.1	Oct. 28 to Nov. 2....	6	808	2,489	174	8	23	16	4.64	1.72	10.96	12.68
68	...do.....	832	2,770	3.3	Oct. 29 to Nov. 6....	9	1,414	3,201	431	16	52	5	3.28	1.16	7.70	8.86
69	...do.....	1,280	4,301	3.4	Nov. 1 to Nov. 7.....	7	1,766	4,744	443	10	35	18	3.99	1.39	9.45	10.84
70	...do.....	704	2,251	3.2	Nov. 4 to Nov. 9....	6	817	2,529	278	12	39	3	2.94	.99	6.84	7.83
71	...do.....	1,850	6,116	3.3	Nov. 5 to Nov. 11...	7	2,442	6,919	803	13	43	0	3.04	1.04	7.14	8.18

Details of feeding experiments in 1911 and 1912 Continued.

EXPERIMENT A, STATION 3, 1912.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
1	Broilers	720	1,191	1.52	Aug. 6 to Aug. 19	14	1,339	1,600	409	34	57	.....	3.27	6.50	1.09	7.69
2	Springers	560	1,014	1.81	Aug. 8 to Aug. 20	13	963	1,230	216	21	39	18	4.46	8.84	1.53	10.37
3	do	720	1,309	1.82	Aug. 9 to Aug. 21	13	1,238	1,600	291	22	40	.....	4.25	8.39	1.48	9.87
4	Broilers	720	1,261	1.75	Aug. 13 to Aug. 22	10	950	1,619	358	28	50	.....	2.65	5.09	1.03	6.12
5	Springers	1,120	2,032	1.81	Aug. 15 to Aug. 23	9	1,366	2,344	312	15	28	.....	4.38	8.22	1.65	9.87
6	Broilers	1,200	2,044	1.70	Aug. 17 to Aug. 25	9	1,392	2,460	416	20	35	8	3.35	6.40	1.36	7.76
7	Springers	2,480	4,465	1.80	Aug. 16 to Aug. 26	11	3,447	5,116	651	15	26	18	5.29	10.06	2.13	12.19
8	Broilers	720	1,189	1.65	Aug. 18 to Aug. 27	10	871	1,438	249	21	35	7	3.50	6.77	1.47	8.24
9	Springers	1,040	1,849	1.78	Aug. 19 to Aug. 27	9	1,123	2,202	353	19	34	13	3.18	6.25	1.39	7.64
10	do	720	1,374	1.91	Aug. 20 to Aug. 28	9	770	1,583	209	15	29	15	3.68	7.23	1.72	8.95
11	Broilers	1,520	2,440	1.61	Aug. 23 to Sept. 2	11	2,098	2,869	429	18	28	11	4.89	9.35	2.30	11.65
12	do	2,240	3,690	1.65	Aug. 23 to Sept. 3	12	3,360	4,632	942	26	42	19	3.57	6.82	1.66	8.48
13	do	1,440	2,446	1.70	Aug. 23 to Sept. 4	13	2,318	3,145	699	29	49	18	3.32	6.39	1.59	7.98
14	Springers	1,360	2,417	1.78	Aug. 26 to Sept. 5	11	1,809	3,031	614	25	45	10	2.95	5.76	1.48	7.24
15	do	720	1,409	1.96	Aug. 28 to Sept. 8	12	1,087	1,749	340	24	47	7	3.20	6.35	1.50	7.85
16	do	1,040	1,835	1.76	Aug. 29 to Sept. 8	11	1,446	2,258	423	41	41	.....	3.42	6.81	1.57	8.38
17	do	960	1,783	1.86	Aug. 30 to Sept. 10	12	1,469	2,168	385	40	40	2	3.82	7.56	1.70	9.26
18	do	800	1,956	2.07	Aug. 31 to Sept. 10	11	1,104	1,938	282	17	35	3	3.92	7.80	1.76	9.56
19	do	880	1,763	2.00	Sept. 3 to Sept. 12	10	1,100	2,077	314	18	36	8	3.50	7.17	1.54	8.71
20	do	1,600	3,028	1.89	Sept. 4 to Sept. 15	12	2,528	3,797	769	25	48	12	3.29	6.72	1.48	8.20
21	do	720	1,507	2.09	Sept. 5 to Sept. 17	13	1,296	1,979	472	31	66	5	2.75	5.67	1.17	6.84
22	do	720	1,599	2.22	Sept. 7 to Sept. 19	13	1,382	2,047	448	28	62	7	3.08	6.32	1.27	7.59
23	do	556	1,162	2.09	Sept. 6 to Sept. 19	14	1,134	1,543	381	33	69	2	2.98	6.06	1.24	7.30
24	do	800	1,639	2.05	Sept. 10 to Sept. 20	11	1,360	2,112	473	29	59	.....	2.88	5.85	1.15	7.00
25	do	1,360	2,635	1.94	Sept. 11 to Sept. 22	12	2,598	3,462	827	31	61	24	3.14	6.41	1.20	7.61
26	do	1,120	2,275	2.03	Sept. 12 to Sept. 23	12	2,139	2,816	541	24	48	27	3.95	8.14	1.53	9.67
27	Broilers	800	1,402	1.75	Sept. 13 to Sept. 23	11	1,400	1,730	328	23	41	24	4.27	8.76	1.66	10.42
28	Springers	1,040	2,161	2.08	Sept. 14 to Sept. 24	11	1,830	2,787	626	29	60	21	2.92	6.08	1.10	7.18
29	do	720	1,547	2.15	Sept. 14 to Sept. 25	12	1,382	1,992	445	29	62	12	3.11	6.39	1.16	7.55
30	do	720	1,588	2.21	Sept. 16 to Sept. 25	10	1,145	1,904	316	20	44	4	3.62	7.50	1.35	8.85

31	...do.....	1,280	2,797	2.19	Sept. 17 to Sept. 26..	10	2,022	3,466	669	24	52	10	3.02	6.24	1.09	7.33
32	...do.....	800	1,771	2.21	Sept. 18 to Sept. 29..	12	1,560	2,254	483	27	60	10	3.23	6.56	1.11	7.67
33	...do.....	1,360	2,774	2.04	Sept. 20 to Sept. 30..	11	2,434	3,577	803	29	59	23	3.03	6.10	1.02	7.12
34	...do.....	930	2,322	2.50	Sept. 23 to Oct. 1....	9	1,358	2,697	375	16	40	.....	3.62	7.32	1.24	8.56
35	...do.....	1,280	2,905	2.27	Sept. 21 to Oct. 1....	11	2,304	3,743	838	29	66	4	2.75	5.56	.92	6.48
36	...do.....	720	1,479	2.05	Sept. 19 to Oct. 2....	14	1,649	1,986	507	34	70	8	3.25	6.58	1.09	7.67
37	...do.....	1,040	2,168	2.08	Sept. 24 to Oct. 2....	9	1,550	2,669	501	23	48	.....	3.09	6.14	1.02	7.16
38	...do.....	1,280	2,790	2.18	Sept. 24 to Oct. 3....	10	2,074	3,318	528	19	41	19	3.93	7.83	1.28	9.11
39	...do.....	960	2,267	2.36	Sept. 25 to Oct. 3....	9	1,421	2,541	274	12	29	14	5.18	10.27	1.68	11.95
40	...do.....	720	1,737	2.41	Sept. 25 to Oct. 4....	10	1,166	2,106	369	21	51	14	3.16	6.26	1.01	7.27
41	...do.....	1,200	2,491	2.08	Sept. 27 to Oct. 6....	10	1,956	2,986	495	20	41	6	3.95	7.71	1.19	8.90
42	...do.....	1,360	3,124	2.30	Sept. 28 to Oct. 7....	10	2,203	3,820	696	22	51	10	3.17	6.19	.92	7.11
43	...do.....	1,360	3,513	2.58	Sept. 30 to Oct. 8....	12	1,904	3,987	474	13	35	12	4.02	7.89	1.23	9.12
44	...do.....	720	1,855	2.58	Oct. 1 to Oct. 8.....	8	893	2,067	212	12	29	6	4.21	8.25	1.29	9.54
45	...do.....	321	724	2.26	Sept. 19 to Oct. 9....	21	1,072	975	251	35	78	4	4.27	8.51	1.39	9.90
46	...do.....	1,280	3,144	2.46	Oct. 1 to Oct. 9.....	9	1,766	3,527	383	12	30	13	4.61	9.02	1.44	10.46
47	...do.....	1,280	3,032	2.37	Oct. 3 to Oct. 11.....	9	1,690	3,580	548	18	43	.....	3.08	6.00	.96	6.96
48	...do.....	1,120	2,871	2.56	Oct. 4 to Oct. 13.....	10	1,770	3,412	541	19	48	7	3.27	6.29	.97	7.26
49	Springers.	2,240	5,249	2.34	Oct. 5 to Oct. 14.....	10	3,651	6,579	1,330	25	59	25	2.75	5.27	.84	6.11
50	...do.....	880	2,212	2.51	Oct. 7 to Oct. 15.....	9	1,338	2,655	443	20	50	2	3.02	5.82	.99	6.81
51	...do.....	1,600	4,020	2.51	Oct. 8 to Oct. 16.....	9	2,496	4,617	597	15	37	8	5.18	8.04	1.42	9.46
52	...do.....	800	2,070	2.59	Oct. 9 to Oct. 16.....	8	1,120	2,396	326	16	41	13	3.44	6.63	1.15	7.78
53	...do.....	1,280	3,521	2.75	Oct. 11 to Oct. 17....	7	1,715	4,048	527	15	41	7	3.25	6.22	1.09	7.31
54	...do.....	640	1,531	2.39	Oct. 12 to Oct. 20....	9	1,114	1,867	336	22	53	4	3.32	6.42	1.10	7.52
55	...do.....	1,440	3,895	2.71	Oct. 13 to Oct. 21....	9	2,506	4,466	571	15	40	9	4.39	8.52	1.49	10.01
56	...do.....	880	2,309	2.62	Oct. 15 to Oct. 21....	7	1,197	2,692	383	17	44	9	3.13	6.09	1.06	7.15
57	...do.....	800	2,225	2.78	Oct. 16 to Oct. 24....	9	1,408	2,720	495	22	62	.....	2.84	5.45	.95	6.40
58	...do.....	1,680	4,735	2.82	Oct. 16 to Oct. 25....	10	3,293	5,440	705	15	42	.....	4.67	8.96	1.55	10.51
59	...do.....	2,720	7,840	2.88	Oct. 17 to Oct. 27....	11	5,739	8,850	1,010	13	37	65	5.68	10.93	1.80	12.73
60	Roasters..	1,360	4,138	3.04	Oct. 18 to Oct. 28....	11	2,842	4,676	538	13	40	41	5.28	10.19	1.67	11.86
61	...do.....	720	2,204	3.06	Oct. 19 to Oct. 28....	10	1,382	2,518	314	14	44	12	4.40	8.46	1.33	9.79
62	...do.....	1,120	3,460	3.09	Oct. 20 to Oct. 30....	11	2,352	3,988	528	15	47	27	4.45	8.51	1.34	9.85
63	...do.....	880	2,755	3.13	Oct. 21 to Nov. 1....	9	1,514	3,148	393	14	45	11	3.85	7.46	1.17	8.63
64	...do.....	560	1,739	3.11	Oct. 23 to Nov. 1....	10	1,070	1,968	229	13	41	9	4.67	9.05	1.42	10.47
65	...do.....	800	2,636	3.30	Oct. 25 to Nov. 3....	10	1,480	2,858	222	8	28	16	6.67	12.94	2.13	15.07
66	Broilers...	480	916	1.91	Oct. 21 to Nov. 3....	14	1,272	1,187	271	30	56	9	4.69	9.01	1.52	10.53
67	Roasters..	480	1,446	3.01	Oct. 26 to Nov. 4....	10	893	1,596	150	10	31	7	5.95	11.49	1.99	13.48
68	...do.....	960	3,082	3.21	Oct. 26 to Nov. 4....	10	1,786	3,438	356	12	37	13	5.02	9.68	1.67	11.35
69	Broilers...	436	773	1.77	Oct. 24 to Nov. 6....	14	1,147	1,055	282	37	65	24	4.07	7.87	1.41	9.28
70	Roasters..	1,360	4,348	3.20	Oct. 30 to Nov. 7....	9	2,244	4,621	273	6	20	15	8.22	15.94	3.14	19.08
71	...do.....	800	2,578	3.22	Oct. 31 to Nov. 10...	11	1,621	2,741	163	6	20	19	9.96	19.29	3.78	23.07
72	Broilers...	288	489	1.70	Oct. 30 to Nov. 12...	14	743	657	168	34	58	3	4.42	8.63	1.61	10.24
73	Roasters..	800	2,533	3.17	Nov. 3 to Nov. 12...	10	1,464	2,780	247	10	31	8	5.93	11.50	2.23	13.73
74	...do.....	1,280	4,259	3.33	Nov. 6 to Nov. 14...	9	2,061	4,487	228	5	18	40	9.04	17.46	3.43	20.89
75	...do.....	1,040	3,705	3.56	Nov. 7 to Nov. 14...	8	1,498	3,889	184	5	18	10	8.14	15.77	3.11	18.88

Details of feeding experiments in 1911 and 1912—Continued.

EXPERIMENT A, STATION 3, 1912—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
76	Roasters..	640	2,224	3.48	Nov. 9 to Nov. 15...	7	800	2,332	108	5	17	.....	7.40	14.29	2.79	17.08
77	.do.....	1,520	4,923	3.24	Nov. 10 to Nov. 17...	8	2,341	5,236	313	6	21	.....	7.48	14.13	2.67	16.80
78	.do.....	720	2,403	3.34	Nov. 12 to Nov. 18...	7	979	2,496	293	4	13	4	10.53	19.35	4.02	23.37
79	...do.....	1,350	4,603	3.38	Nov. 13 to Nov. 19...	7	1,863	5,228	625	14	46	18	2.98	5.42	1.13	6.55
80	.do.....	576	2,044	3.55	Nov. 14 to Nov. 20...	7	806	2,183	139	7	24	9	5.80	10.45	2.12	12.57
81	...do.....	748	2,690	3.60	Nov. 16 to Nov. 21...	6	943	2,859	169	6	23	3	5.40	9.60	1.91	11.51
82	Broilers..	288	468	1.63	Nov. 10 to Nov. 24...	15	786	623	155	33	54	9	5.07	9.37	1.82	11.19
83	Roasters..	1,560	5,158	3.31	Nov. 17 to Nov. 24...	8	2,122	5,412	254	5	16	25	8.35	15.05	2.95	18.00
84	.do.....	3,390	10,389	3.06	Nov. 17 to Nov. 25...	9	5,255	11,001	612	6	18	155	8.59	15.51	2.99	18.50
85	.do.....	816	2,839	3.48	Nov. 21 to Nov. 29...	9	1,281	3,038	199	7	24	17	6.44	11.73	2.09	13.82

EXPERIMENT B, STATION 1, 1911.

					1911.											
1	Springers.	900	1,645	1.8	July 15 to July 28...	14	1,566	2,259	614	37	68	5	2.55	4.44	2.00	6.44
2	...do.....	900	1,601	1.8	July 16 to July 30...	15	1,656	2,187	586	37	65	.....	2.83	4.83	1.78	6.61
3	Broilers..	900	1,512	1.7	July 19 to Aug. 1....	14	1,558	2,135	623	41	69	7	2.50	4.38	1.49	5.87
4	...do.....	900	1,565	1.7	July 20 to Aug. 2....	14	1,521	2,171	606	39	67	.....	2.51	4.40	1.41	5.81
5	Springers.	900	1,651	1.8	July 21 to Aug. 3....	14	1,539	2,279	628	38	70	7	2.45	4.39	1.32	5.71
6	...do.....	900	1,696	1.9	July 21 to Aug. 5....	16	1,746	2,167	471	28	52	.....	3.71	6.76	2.07	8.83
7	Broilers...	900	1,472	1.6	July 22 to Aug. 6....	16	1,827	2,174	702	48	78	.....	2.60	4.75	1.39	6.14
8	Springers.	900	1,573	1.8	.....do.....	16	1,755	2,201	628	40	70	10	2.79	5.11	1.51	6.62
9	Broilers...	900	1,370	1.5	July 22 to Aug. 7....	17	1,872	2,010	640	47	71	5	2.93	5.38	1.58	6.96
10	Springers.	900	1,671	1.9	.....do.....	17	1,872	2,270	599	36	67	7	3.13	5.75	1.70	7.45
11	...do.....	900	1,590	1.8	July 23 to Aug. 8....	17	1,919	2,133	543	34	60	8	3.53	6.60	1.96	8.56
12	...do.....	900	1,600	1.8	July 23 to Aug. 8....	17	1,872	2,128	528	33	59	5	3.55	6.29	1.97	8.26
13	Broilers...	900	1,403	1.6	July 25 to Aug. 9....	16	1,859	1,948	545	39	61	29	3.41	6.55	2.02	8.57
14	Springers.	900	1,629	1.8	July 26 to Aug. 10...	16	1,730	2,043	414	25	46	17	4.18	8.28	2.69	10.97
15	...do.....	900	1,729	1.9	July 27 to Aug. 11...	16	1,714	2,199	470	27	52	4	3.65	7.34	2.49	9.83
16	...do.....	900	1,706	1.9	July 29 to Aug. 13...	16	1,629	2,267	561	33	62	.....	2.90	6.01	2.12	8.13
17	...do.....	900	1,750	1.9	July 31 to Aug. 14...	15	1,485	2,237	487	28	54	11	3.05	6.59	2.40	8.99
18	...do.....	900	1,887	2.1	Aug. 2 to Aug. 15...	14	1,368	2,328	441	23	49	14	3.10	6.90	2.53	9.43
19	...do.....	900	1,740	1.9	Aug. 3 to Aug. 16....	14	1,359	2,182	442	25	49	13	3.07	6.99	2.57	9.56
20	...do.....	900	1,867	2.1	Aug. 4 to Aug. 17....	14	1,359	2,274	407	22	45	7	3.34	7.68	2.83	10.51

21	...do.....	900	1,957	2.2	Aug. 5 to Aug. 18....	14	1,350	2,312	355	18	39	.....	3.80	8.90	3.30	12.20
22	...do.....	900	2,027	2.3	Aug. 7 to Aug. 20....	14	1,395	2,422	395	20	44	19	3.53	8.41	2.99	11.40
23	...do.....	900	1,925	2.1	Aug. 8 to Aug. 22....	15	1,539	2,335	410	21	46	8	3.75	9.02	3.15	12.17
24	...do.....	900	1,954	2.2	Aug. 10 to Aug. 22....	13	1,386	2,478	524	27	58	14	2.65	6.32	2.11	8.43
25	...do.....	900	1,880	2.1	Aug. 11 to Aug. 23....	13	1,475	2,399	519	28	58	9	2.84	6.76	2.19	8.95
26	...do.....	900	2,152	2.4	Aug. 12 to Aug. 24....	13	1,467	2,701	549	25	61	7	2.67	6.40	1.91	8.31
27	...do.....	900	1,920	2.1	.....do.....	13	1,467	2,458	538	28	60	14	2.73	6.38	2.01	8.39
28	...do.....	900	1,815	2.0	Aug. 12 to Aug. 25....	14	1,602	2,431	616	34	68	17	2.60	6.19	1.85	8.04
29	...do.....	900	1,975	2.2	Aug. 13 to Aug. 27....	15	1,782	2,576	601	31	67	23	2.96	7.07	1.95	9.02
30	...do.....	900	2,141	2.4	Aug. 13 to Aug. 28....	16	1,908	2,874	733	34	81	15	2.60	6.24	1.71	7.95
31	...do.....	900	1,663	1.9	Aug. 16 to Aug. 29....	14	1,737	2,482	819	49	91	14	2.12	5.07	1.39	6.46
32	...do.....	900	1,837	2.0	Aug. 18 to Aug. 30....	13	1,760	2,713	876	48	97	13	2.01	4.75	1.28	6.03
33	...do.....	900	2,044	2.3	.....do.....	13	1,674	2,661	617	30	69	13	2.71	6.40	1.68	8.08
34	...do.....	900	2,027	2.3	Aug. 18 to Aug. 31....	14	1,818	2,702	675	33	75	15	2.69	6.32	1.67	7.99
35	...do.....	900	2,078	2.3	Aug. 19 to Sept. 1....	14	1,809	2,734	656	32	73	3	2.76	6.42	1.72	8.14
36	...do.....	900	2,005	2.2	Aug. 21 to Sept. 4....	15	1,970	2,827	822	41	91	3	2.40	5.67	1.50	7.17
37	...do.....	900	2,046	2.3	Aug. 24 to Sept. 5....	13	1,856	2,763	717	35	80	9	2.59	5.80	1.51	7.31
38	...do.....	900	2,095	2.3	Aug. 25 to Sept. 5....	12	1,503	2,711	616	29	68	8	2.44	5.70	1.49	7.19
39	...do.....	900	2,094	2.3	Aug. 25 to Sept. 6....	13	1,611	2,821	727	35	31	4	2.22	5.31	1.35	6.66
40	...do.....	900	2,132	2.4	Aug. 25 to Sept. 7....	14	1,728	2,813	681	32	76	18	2.54	5.89	1.51	7.40
41	...do.....	900	2,236	2.5	Aug. 27 to Sept. 8....	13	1,629	2,848	612	27	68	19	2.66	6.07	1.57	7.64
42	...do.....	900	2,069	2.3	Aug. 28 to Sept. 11...	15	1,910	2,765	696	34	77	6	2.74	5.75	1.48	7.23
43	...do.....	900	2,348	2.6	Aug. 30 to Sept. 10...	12	1,567	2,799	451	19	50	10	3.47	7.79	1.98	9.77
44	...do.....	900	2,101	2.3	Aug. 31 to Sept. 11...	12	1,587	2,763	662	31	74	11	2.40	5.71	1.36	7.07
45	...do.....	900	1,938	2.2	Sept. 1 to Sept. 13....	13	1,700	2,584	646	33	72	15	2.63	5.84	1.48	7.32
46	...do.....	900	2,239	2.5	Sept. 2 to Sept. 14....	13	1,575	2,884	645	29	72	14	2.44	5.55	1.36	6.91
47	...do.....	900	2,209	2.5	Sept. 2 to Sept. 15....	14	1,683	2,749	540	24	60	15	3.12	6.87	1.73	8.60
48	...do.....	900	2,058	2.3	Sept. 2 to Sept. 17....	16	1,899	2,798	740	36	82	21	2.57	5.55	1.40	6.95
49	...do.....	900	2,347	2.6	Sept. 3 to Sept. 18....	16	1,908	2,993	646	28	72	33	2.95	6.18	1.57	7.75
50	...do.....	900	2,193	2.4	Sept. 4 to Sept. 18....	15	1,800	2,862	669	30	74	26	2.69	5.83	1.44	7.27
51	...do.....	900	2,171	2.4	Sept. 5 to Sept. 19...	15	1,818	2,796	625	29	69	16	2.91	6.24	1.61	7.85
52	...do.....	900	2,232	2.5	Sept. 5 to Sept. 19...	14	1,701	2,774	542	24	60	22	3.14	6.66	1.71	8.38
53	...do.....	900	2,352	2.6	Sept. 6 to Sept. 20...	14	1,710	2,939	587	25	65	22	2.91	6.18	1.57	7.75
54	...do.....	900	2,235	2.5	Sept. 8 to Sept. 21...	14	1,737	2,900	665	30	74	19	2.61	5.54	1.40	6.94
55	...do.....	900	2,133	2.4	Sept. 9 to Sept. 22...	14	1,773	2,901	768	36	85	18	2.31	4.89	1.21	6.10
56	...do.....	900	2,290	2.5	.....do.....	14	1,773	2,909	619	27	69	24	2.86	6.03	1.51	7.54
57	...do.....	900	2,350	2.6	Sept. 11 to Sept. 24..	14	1,773	2,874	524	22	58	18	3.38	7.21	1.86	9.07
58	...do.....	900	2,315	2.6	Sept. 12 to Sept. 25..	14	1,809	2,834	519	22	58	15	3.49	7.48	1.89	9.37
59	...do.....	900	2,331	2.6	Sept. 13 to Sept. 27..	15	1,998	2,908	577	25	64	15	3.46	7.35	1.84	9.19
60	...do.....	900	2,276	2.5	.....do.....	15	1,998	2,876	600	26	67	20	3.33	7.07	1.77	8.84
61	...do.....	900	2,343	2.6	Sept. 15 to Sept. 28..	14	1,899	3,004	661	28	73	8	2.87	6.11	1.53	7.64
62	...do.....	900	2,473	2.8	Sept. 16 to Sept. 29..	14	1,908	3,001	528	21	59	18	3.61	7.69	1.93	9.62
63	...do.....	900	2,376	2.6	Sept. 18 to Oct. 1....	14	1,953	2,992	616	26	68	15	3.17	6.51	1.68	8.19
64	...do.....	900	2,319	2.6	Sept. 19 to Oct. 2....	14	1,971	3,118	799	34	89	15	2.47	5.16	1.28	6.44
65	...do.....	900	2,218	2.5	Sept. 19 to Oct. 3....	15	2,142	2,977	759	34	84	23	2.82	5.89	1.45	7.34

Details of feeding experiments in 1911 and 1912. Continued

EXPERIMENT 15, STATION 4, 1911.—Continued

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1911		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
66	Springers	900	2,324	2.5	Sept. 30 to Oct. 4	5	2,424	2,947	623	31	77	27	3.95	6.32	1.47	8.05
67	do	900	2,361	2.6	Sept. 27 to Oct. 5	11	1,930	2,969	605	26	67	14	3.20	6.34	1.69	8.52
68	do	900	2,354	2.8	do	11	1,930	3,059	705	30	78	4	2.74	5.18	2.03	10.24
69	do	900	2,554	2.8	Sept. 23 to Oct. 6	11	1,993	3,165	611	24	68	12	3.27	6.78	1.68	8.46
70	do	900	2,520	2.8	Sept. 24 to Oct. 8	15	2,302	3,164	644	26	72	12	3.42	7.02	1.70	8.78
71	do	900	2,584	2.9	Sept. 25 to Oct. 8	14	2,046	3,291	708	27	79	20	2.85	6.09	1.44	7.53
72	do	900	2,674	3.0	Sept. 27 to Oct. 10	14	2,046	3,331	657	25	73	32	6.07	6.34	1.52	7.85
73	do	900	2,577	2.6	Sept. 26 to Oct. 11	16	2,358	3,049	672	28	75	29	3.51	7.13	1.73	8.80
74	do	900	2,580	2.8	Sept. 30 to Oct. 13	14	2,052	3,303	873	36	97	9	2.35	4.84	1.31	5.97
75	do	900	2,411	2.7	Sept. 30 to Oct. 15	14	2,097	3,309	898	37	100	17	2.34	4.72	1.69	5.87
76	do	900	2,762	3.1	Oct. 1 to Oct. 15	15	2,340	3,554	792	30	88	10	2.95	5.54	1.37	6.88
77	do	900	2,528	2.8	do	15	2,250	3,203	675	27	75	19	3.35	6.53	1.54	8.34
78	do	900	2,616	2.9	Oct. 3 to Oct. 16	14	2,188	3,255	639	24	71	23	3.42	7.03	1.64	8.69
79	do	900	2,849	3.1	Oct. 4 to Oct. 17	14	2,160	3,293	474	17	53	17	4.56	9.32	2.14	11.52
80	do	900	2,766	3.1	do	14	2,166	3,238	472	17	52	20	4.46	9.17	2.09	11.26
81	do	900	2,493	2.8	Oct. 5 to Oct. 18	14	2,151	2,960	497	20	55	13	4.33	8.89	2.00	10.89
82	Roasters	84	422	5.0	Oct. 7 to Oct. 18	12	474	458	36	9	43	0	4.75	9.78	2.19	11.97
83	Springers	900	2,807	3.1	Oct. 7 to Oct. 20	14	2,166	3,411	604	22	67	24	3.19	7.33	1.66	8.99
84	do	900	2,750	3.1	Oct. 9 to Oct. 22	14	2,142	3,314	564	21	63	13	3.80	7.80	1.81	9.61
85	do	900	2,556	2.8	Oct. 10 to Oct. 24	14	2,166	3,319	763	30	85	15	2.76	5.68	1.34	7.02
86	do	900	2,710	3.0	Oct. 11 to Oct. 24	14	2,145	3,265	555	21	62	26	3.84	7.90	1.87	9.77
87	do	900	2,708	3.0	Oct. 12 to Oct. 25	14	2,097	3,332	624	23	69	13	3.36	7.04	1.63	8.69
88	do	900	2,672	3.0	Oct. 13 to Oct. 26	14	2,088	3,398	726	18	58	22	3.97	8.34	2.05	10.37
89	do	900	2,633	2.9	Oct. 14 to Oct. 27	14	2,043	3,405	772	30	86	17	2.65	5.61	1.35	6.96
90	do	900	2,710	3.0	Oct. 15 to Oct. 27	13	1,961	3,323	607	29	67	24	3.23	6.98	1.71	8.69
91	do	900	2,904	3.3	Oct. 17 to Oct. 30	14	2,088	3,569	575	19	64	15	3.63	7.83	1.96	9.79
92	do	900	2,973	3.3	Oct. 18 to Oct. 31	14	2,034	3,507	534	18	59	13	3.81	8.87	2.32	11.19
93	do	900	2,917	3.2	Oct. 19 to Nov. 1	14	2,034	3,359	442	15	49	14	4.60	9.95	2.70	12.65
94	do	900	2,845	3.1	Oct. 20 to Nov. 3	14	2,016	3,060	215	9	27	26	8.23	18.00	4.00	22.00
95	do	900	2,966	3.3	Oct. 22 to Nov. 3	13	1,936	3,449	483	16	54	12	4.01	8.96	2.52	11.48
96	do	1,350	4,690	3.5	Oct. 23 to Nov. 6	15	3,149	5,243	517	11	38	33	6.03	13.47	4.04	17.51
97	do	900	2,679	3.0	Oct. 26 to Nov. 7	13	1,761	3,320	641	24	71	8	2.75	6.23	1.92	8.15
98	do	900	3,182	3.5	Oct. 28 to Nov. 8	12	1,647	3,535	353	11	39	11	4.67	10.69	3.05	13.74
99	do	900	2,955	3.3	Oct. 29 to Nov. 9	12	1,638	3,580	625	21	69	7	2.62	5.73	1.79	7.52
100	do	900	2,900	3.3	Oct. 31 to Nov. 10	11	1,453	3,506	516	17	57	1	2.81	6.41	1.98	8.39

101	...do.....	900	3,127	3.5	Nov. 1 to Nov. 12...	12	1,593	3,408	281	9	31	12	5.67	13.45	3.70	17.15
102	...do.....	900	3,131	3.5	Nov. 2 to Nov. 15...	12	1,557	3,594	463	15	51	11	3.36	8.01	2.14	10.15
103	...do.....	900	2,831	3.2	Nov. 3 to Nov. 14...	12	1,566	3,284	453	16	50	7	3.46	8.27	2.26	10.53
104	...do.....	1,800	5,941	3.3	Nov. 4 to Nov. 15...	12	3,096	7,190	1,249	21	69	0	2.47	5.89	1.61	7.50
105	...do.....	900	2,996	3.3	Nov. 5 to Nov. 16...	12	1,530	3,344	348	12	39	10	4.40	10.55	2.95	13.50
106	...do.....	900	3,076	3.4	Nov. 5 to Nov. 17...	13	1,665	3,625	549	18	61	8	3.03	7.30	2.05	9.35
107	...do.....	900	2,964	3.3	Nov. 7 to Nov. 19...	13	1,715	3,452	488	16	54	10	3.51	8.49	2.37	10.86
108	...do.....	900	2,956	3.3	Nov. 8 to Nov. 19...	12	1,521	3,270	314	11	35	8	4.84	11.55	3.32	14.87
109	...do.....	900	3,025	3.4	Nov. 8 to Nov. 20...	13	1,647	3,398	373	12	41	13	4.42	10.52	3.08	13.60
110	...do.....	900	3,151	3.5	Nov. 9 to Nov. 21...	13	1,674	3,400	249	8	28	24	6.72	14.70	4.71	19.41
111	...do.....	900	3,067	3.4	Nov. 10 to Nov. 22...	13	1,674	3,431	364	12	40	16	4.60	10.01	3.31	13.32
112	...do.....	900	3,178	3.5	Nov. 13 to Nov. 23..	11	1,413	3,384	206	7	23	20	6.86	15.94	5.34	21.28
113	...do.....	1,350	4,680	3.5	Nov. 14 to Nov. 23..	10	1,931	5,097	417	9	31	28	4.63	9.31	3.03	12.34

EXPERIMENT B, STATION 1, 1912.

					1912.											
1	Springers .	900	1,510	1.68	July 29 to Aug. 11...	14	1,568	2,187	677	45	75	21	2.32	5.60	2.40	8.00
2	...do.....	900	1,419	1.58	July 31 to Aug. 13...	14	1,532	2,160	741	52	82	8	2.07	5.00	1.65	6.65
3	...do.....	900	1,504	1.67	Aug. 2 to Aug. 14....	13	1,469	2,173	569	51	74	8	2.20	5.31	1.45	6.76
4	...do.....	900	1,517	1.69	Aug. 6 to Aug. 19....	14	1,399	1,984	467	31	52	10	3.00	8.32	2.03	10.35
5	...do.....	900	1,506	1.67	Aug. 8 to Aug. 20....	13	1,338	2,036	530	35	59	.....	2.52	6.11	1.82	7.93
6	...do.....	900	1,688	1.88	Aug. 9 to Aug. 22....	14	1,435	2,331	643	38	71	.....	2.23	5.41	1.62	7.03
7	...do.....	900	1,759	1.95	Aug. 11 to Aug. 25...	14	1,541	2,310	551	31	61	7	2.80	6.77	2.00	8.77
8	...do.....	900	1,711	1.90	Aug. 13 to Aug. 26...	14	1,459	2,206	495	29	55	2	2.95	7.14	2.13	9.27
9	...do.....	900	1,724	1.92	Aug. 14 to Aug. 26...	13	1,376	2,342	618	36	69	6	2.23	5.39	1.60	6.99
10	...do.....	900	1,789	1.99	Aug. 15 to Aug. 27...	13	1,317	2,299	510	29	57	6	2.58	6.24	1.83	8.07
11	...do.....	900	1,720	1.91	Aug. 16 to Aug. 28...	13	1,268	2,184	464	27	52	.....	2.73	5.61	1.96	8.57
12	...do.....	900	1,712	1.90	Aug. 17 to Aug. 29...	13	1,231	2,152	440	26	49	10	2.80	6.77	2.03	8.80
13	...do.....	900	1,627	1.81	Aug. 19 to Aug. 29...	11	1,085	2,187	560	34	62	.....	1.94	4.68	1.44	6.12
14	...do.....	900	1,765	1.85	Aug. 21 to Aug. 30...	10	1,084	2,224	459	26	51	6	2.36	5.71	1.57	7.28
15	...do.....	900	1,729	1.92	.....do.....	10	1,171	2,219	490	28	54	5	2.39	5.78	1.62	7.40
16	...do.....	900	1,771	1.97	Aug. 22 to Sept. 2...	12	1,288	2,318	547	31	61	.....	2.35	5.70	1.48	7.18
17	...do.....	900	1,744	1.94	Aug. 23 to Sept. 3...	12	1,284	2,263	519	30	58	11	2.47	5.98	1.55	7.53
18	...do.....	900	1,730	1.92	Aug. 23 to Sept. 4...	13	1,398	2,342	612	35	68	13	2.28	5.52	1.44	6.96
19	...do.....	900	1,567	1.74	Aug. 24 to Sept. 5...	13	1,402	2,309	742	47	82	5	1.89	4.57	1.18	5.75
20	...do.....	900	1,822	2.02	Aug. 24 to Sept. 6...	14	1,521	2,326	504	28	56	.....	3.02	7.31	1.88	9.19
21	...do.....	900	1,762	1.96	Aug. 26 to Sept. 7...	13	1,379	2,202	440	25	49	33	3.13	7.58	2.13	9.71
22	...do.....	900	1,691	1.88	Aug. 26 to Sept. 9...	15	1,710	2,176	485	29	54	1	3.53	8.11	2.10	10.21
23	...do.....	900	1,559	1.73	Aug. 27 to Sept. 9...	14	1,604	2,244	685	44	76	10	2.34	5.38	1.38	6.76
24	...do.....	900	1,831	2.03	Aug. 28 to Sept. 10..	14	1,607	2,403	572	31	64	17	2.81	6.46	1.65	8.11
25	...do.....	900	1,745	1.94	Aug. 28 to Sept. 11..	15	1,734	2,358	613	35	68	.....	2.83	6.51	1.66	8.17

Details of feeding experiments in 1911 and 1912—Continued.

EXPERIMENT B, STATION 1, 1912—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
26	Springers	900	1,947	2.16	Aug. 29 to Sept. 12	15	1,828	2,560	613	32	68	5	2.98	6.86	1.69	8.55
27	do	900	1,826	2.03	Aug. 31 to Sept. 13	14	1,691	2,477	651	36	72	19	2.60	5.97	1.46	7.43
28	do	900	2,109	2.34	Aug. 31 to Sept. 15	16	1,980	2,575	466	22	52	10	4.25	9.77	2.28	12.05
29	do	900	1,799	2.00	Aug. 31 to Sept. 16	17	2,154	2,601	802	45	89	6	2.69	6.18	1.41	7.59
30	do	900	1,987	2.21	Sept. 3 to Sept. 16	14	1,773	2,592	605	30	67	5	2.93	6.74	1.71	8.45
31	do	900	1,813	2.01	Sept. 4 to Sept. 17	14	1,829	2,562	749	41	83	11	2.44	5.61	1.28	6.89
32	do	900	1,844	2.05	Sept. 5 to Sept. 18	14	1,847	2,685	841	46	93	2	2.20	5.05	1.14	6.19
33	do	900	1,887	2.10	Sept. 6 to Sept. 19	14	1,862	2,570	692	37	77	.....	2.69	6.19	1.39	7.58
34	do	900	2,115	2.35	Sept. 7 to Sept. 19	13	1,735	2,829	714	34	79	.....	2.43	5.59	1.24	6.83
35	do	900	2,153	2.39	Sept. 8 to Sept. 20	13	1,796	2,808	655	30	73	4	2.74	6.31	1.34	7.65
36	do	900	2,144	2.38	Sept. 10 to Sept. 22	13	1,805	2,716	572	27	64	3	3.16	7.26	1.58	8.84
37	do	900	2,068	2.30	Sept. 11 to Sept. 23	13	1,862	2,833	705	37	85	.....	2.43	5.60	1.18	6.78
38	do	900	2,141	2.38	Sept. 12 to Sept. 24	13	1,750	2,798	657	31	73	4	2.66	6.13	1.38	7.51
39	do	900	2,130	2.37	Sept. 12 to Sept. 25	14	2,038	2,875	745	35	83	5	2.74	6.28	1.32	7.60
40	do	900	2,168	2.41	Sept. 13 to Sept. 26	14	2,055	2,894	726	34	81	10	2.83	6.51	1.35	7.86
41	do	900	2,141	2.38	Sept. 14 to Sept. 27	14	2,047	2,927	786	37	87	5	2.60	5.99	1.24	7.23
42	do	900	3,374	2.64	Sept. 15 to Sept. 29	15	2,221	3,004	630	27	70	.....	3.53	8.11	1.66	9.77
43	do	900	2,375	2.64	Sept. 17 to Sept. 30	14	2,081	3,170	795	33	88	.....	2.62	6.02	1.20	7.22
44	do	900	2,382	2.65	Sept. 17 to Oct. 1	15	2,215	3,125	743	31	83	.....	2.98	6.86	1.31	8.17
45	do	900	2,322	2.58	Sept. 18 to Oct. 1	14	2,060	3,031	709	31	79	11	2.91	6.68	1.35	8.03
46	do	900	2,333	2.59	Sept. 19 to Oct. 1	13	1,918	3,082	749	32	83	4	2.56	5.89	1.18	7.07
47	do	900	2,422	2.69	Sept. 20 to Oct. 6	17	2,497	3,192	770	32	86	7	3.24	7.46	1.44	8.90
48	do	900	2,188	2.43	Sept. 20 to Oct. 7	18	2,611	3,026	838	38	93	14	3.12	7.17	1.41	8.58
49	do	900	2,535	2.82	Sept. 21 to Oct. 8	18	2,788	3,353	818	32	91	17	3.41	7.29	1.44	8.73
50	do	900	2,374	2.63	Sept. 22 to Oct. 9	18	2,769	3,148	777	33	86	8	3.56	7.62	1.50	9.12
51	do	900	2,254	2.50	Sept. 23 to Oct. 10	18	2,707	3,060	806	36	90	13	3.47	7.31	1.48	8.79
52	do	900	2,297	2.55	Sept. 25 to Oct. 10	16	2,448	2,983	686	30	76	4	3.57	7.64	1.52	9.16
53	do	900	2,330	2.59	Sept. 26 to Oct. 11	16	2,405	3,027	697	30	77	1	3.45	7.44	1.49	8.93
54	do	900	2,387	2.65	Sept. 26 to Oct. 12	17	2,582	3,044	657	28	73	18	3.93	8.41	1.70	10.11
55	do	900	2,428	2.70	Sept. 28 to Oct. 14	17	2,601	3,025	597	25	66	14	4.36	9.33	1.80	11.13
56	do	900	2,678	2.98	Sept. 29 to Oct. 14	16	2,432	3,583	905	34	100	17	2.69	5.75	1.13	6.88
57	do	900	2,653	2.95	Sept. 30 to Oct. 15	16	2,409	3,226	573	22	64	13	4.20	8.99	1.84	10.83
58	do	900	2,530	2.81	Oct. 1 to Oct. 16	16	2,306	3,232	702	28	78	.....	3.41	7.30	1.51	8.81
59	do	900	2,771	3.08	Oct. 3 to Oct. 17	15	2,244	3,247	476	17	53	14	4.71	10.09	2.07	12.16
60	do	900	2,383	2.65	Oct. 3 to Oct. 18	16	2,386	3,129	746	31	83	23	3.20	6.85	1.42	8.27

61	...do.....	900	2,679	2.98	Oct. 4 to Oct. 20....	17	2,500	3,375	696	26	77	10	3.59	7.69	1.57	9.26
62	...do.....	900	2,617	2.91	Oct. 8 to Oct. 21.....	14	2,109	3,266	649	25	72	11	3.25	6.95	1.45	8.40
63	...do.....	900	2,440	2.71	Oct. 9 to Oct. 22.....	14	2,122	3,032	592	24	66	7	3.58	7.67	1.63	9.30
64	...do.....	900	2,495	2.77	Oct. 10 to Oct. 23....	14	2,157	3,239	744	30	83	17	2.90	6.20	1.33	7.53
65	...do.....	900	2,709	3.01	Oct. 11 to Oct. 24....	14	2,181	3,159	450	17	50	13	4.85	10.37	2.24	12.61
66	...do.....	900	2,675	2.97	Oct. 12 to Oct. 25....	14	2,200	3,220	545	20	61	18	4.04	8.64	1.89	10.53
67	...do.....	900	2,864	3.18	Oct. 12 to Oct. 27....	16	2,570	3,408	544	19	60	14	4.72	10.10	2.13	12.23
68	...do.....	900	2,751	3.06	Oct. 13 to Oct. 28....	16	2,586	3,330	579	21	64	26	4.47	9.56	2.03	11.59
69	...do.....	900	2,905	3.23	Oct. 15 to Oct. 29....	15	2,362	3,450	545	21	61	35	4.33	9.33	2.14	11.47
70	...do.....	900	2,743	3.05	Oct. 15 to Oct. 30....	16	2,494	3,299	556	20	62	27	4.49	9.60	2.26	11.86
71	...do.....	900	2,694	2.99	Oct. 16 to Oct. 31....	16	2,511	3,361	667	25	74	.....	3.76	8.06	1.91	9.97
72	...do.....	900	2,812	3.12	Oct. 17 to Oct. 31....	15	2,368	3,288	476	17	53	25	4.97	10.64	2.51	13.15
73	...do.....	900	2,824	3.14	Oct. 18 to Nov. 1....	15	2,361	3,395	571	20	63	19	4.14	8.85	2.13	10.98
74	...do.....	900	2,821	3.13	Oct. 19 to Nov. 3....	16	2,520	3,448	627	22	70	16	4.02	8.60	2.03	10.63
75	...do.....	900	2,850	3.17	Oct. 19 to Nov. 4....	17	2,688	3,474	624	22	69	15	4.31	9.21	2.18	11.39
76	...do.....	900	2,920	3.24	Oct. 22 to Nov. 5....	15	2,376	3,430	510	18	57	25	4.66	9.97	2.47	12.44
77	...do.....	900	2,941	3.27	Oct. 24 to Nov. 6....	14	2,195	3,504	563	19	63	19	3.90	8.35	2.05	10.40
78	...do.....	900	2,946	3.27	Oct. 26 to Nov. 7....	13	2,138	3,601	655	22	73	16	3.26	6.56	1.61	8.17
79	...do.....	900	2,858	3.18	Oct. 27 to Nov. 8....	13	2,125	3,405	547	19	61	38	3.88	7.80	1.91	9.71
80	...do.....	900	2,858	3.18	Oct. 28 to Nov. 10...	14	2,260	3,485	627	22	70	25	3.60	7.25	1.79	9.04
81	...do.....	900	2,827	3.14	Oct. 28 to Nov. 11...	15	2,405	3,372	545	19	61	26	4.41	8.86	2.21	11.07
82	...do.....	900	2,818	3.13	Oct. 30 to Nov. 12...	14	2,206	3,320	502	18	56	24	4.39	8.84	2.17	11.01
83	...do.....	900	2,919	3.24	Oct. 31 to Nov. 13...	14	2,234	3,410	491	17	55	40	4.55	9.15	2.23	11.38
84	...do.....	900	3,134	3.48	Nov. 1 to Nov. 14...	14	2,221	3,551	417	13	46	20	5.33	10.71	2.53	13.24
85	...do.....	900	3,080	3.42	Nov. 2 to Nov. 15...	14	2,215	3,380	300	10	33	18	7.38	14.84	3.50	18.34
86	...do.....	900	2,981	3.31	.....do.....	14	2,216	3,413	432	14	48	36	5.13	10.31	2.43	12.74
87	...do.....	900	2,910	3.23	Nov. 3 to Nov. 17...	15	2,260	3,331	421	15	47	36	5.37	10.79	2.52	13.31
88	...do.....	900	3,031	3.37	Nov. 5 to Nov. 17...	13	2,200	3,442	411	14	46	19	5.35	10.76	2.33	13.09
89	...do.....	900	3,089	3.43	Nov. 6 to Nov. 18...	13	2,010	3,550	461	15	51	14	4.36	8.75	2.08	10.83
90	...do.....	900	2,893	3.21	Nov. 7 to Nov. 18...	12	1,839	3,297	404	14	45	19	4.55	9.14	2.19	11.33
91	...do.....	900	2,881	3.20	Nov. 8 to Nov. 19...	12	1,847	3,564	683	24	76	17	2.70	5.42	1.33	6.75
92	...do.....	900	2,775	3.08	Nov. 9 to Nov. 20...	12	1,798	3,336	561	20	62	17	3.19	6.48	1.63	8.06
93	...do.....	900	2,999	3.33	Nov. 10 to Nov. 20..	11	1,632	3,460	461	15	51	21	3.54	7.12	1.80	8.92
94	...do.....	900	3,026	3.36	Nov. 10 to Nov. 21..	12	1,769	3,448	422	14	47	19	4.19	8.42	2.02	10.44
95	...do.....	900	3,240	3.60	Nov. 12 to Nov. 20..	9	1,321	3,470	230	7	26	8	5.74	11.54	3.30	14.84
96	...do.....	900	2,965	3.29	Nov. 13 to Nov. 22..	10	1,470	3,280	315	11	35	8	4.67	9.37	2.81	12.18
97	...do.....	900	3,021	3.36	Nov. 14 to Nov. 24..	11	1,551	3,311	310	10	34	80	5.00	10.06	3.05	13.11
98	...do.....	900	3,338	3.71	Nov. 16 to Nov. 25..	10	1,392	3,560	222	7	25	21	6.27	12.60	3.93	16.53
99	...do.....	900	3,331	3.70	Nov. 17 to Nov. 26..	10	1,417	3,470	139	4	15	18	10.19	20.49	6.25	26.74
100	...do.....	900	3,259	3.62	Nov. 22 to Dec. 1....	10	1,406	3,442	183	6	20	13	7.68	15.44	4.89	20.33

Details of feeding experiments in 1911 and 1912.—Continued.

EXPERIMENT C, STATION 4, 1911.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1911.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
1	Broilers	864	1,248	1.4	June 13 to June 25	13	1,823	1,635	387	31	45	14	4.71	7.70	1.52	9.22
2	do	192	307	1.6	June 14 to June 27	14	426	383	76	25	40	7	5.61	9.12	1.84	10.96
3	do	336	480	1.4	June 22 to July 4	13	521	595	115	24	34	22	4.53	7.39	2.13	9.52
4	do	240	354	1.5	June 25 to July 8	14	321	412	61	17	25	19	5.26	8.74	4.30	13.04
5	do	320	492	1.5	June 30 to July 12	14	406	624	132	27	41	17	3.08	5.11	3.01	8.12
6	do	384	609	1.6	June 30 to July 13	14	548	807	198	33	52	17	2.62	4.30	2.44	6.74
7	do	448	730	1.6	July 2 to July 15	14	659	928	198	27	44	14	3.33	5.29	2.89	8.18
8	do	320	471	1.5	July 14 to July 17	14	493	625	154	33	48	26	3.20	5.09	2.62	7.71
9	do	448	678	1.5	July 6 to July 19	14	726	995	317	47	71	8	2.29	3.62	1.68	5.30
10	do	448	705	1.6	July 7 to July 20	14	753	986	281	40	63	6	2.68	4.19	1.76	5.95
11	do	576	1,046	1.8	July 8 to July 20	13	910	1,384	338	32	59	11	2.69	4.24	1.65	5.86
12	do	896	1,408	1.6	July 9 to July 22	14	1,559	2,029	621	44	69	14	2.51	3.91	1.38	5.29
13	do	704	1,077	1.5	July 11 to July 23	13	1,140	1,426	349	33	50	21	3.27	5.06	1.63	6.69
14	do	768	1,226	1.6	July 12 to July 24	13	1,244	1,685	459	37	60	19	2.71	4.20	1.29	5.49
15	do	898	1,343	1.5	July 14 to July 27	14	1,572	1,772	429	32	48	47	3.66	5.78	1.59	7.37
16	do	1,470	2,443	1.7	July 16 to July 29	14	2,573	3,368	925	38	63	44	2.78	4.32	1.14	5.46
17	Springers	768	1,349	1.8	July 18 to July 31	14	1,329	1,783	434	32	57	12	3.06	4.74	1.22	5.96
18	do	960	1,718	1.8	July 20 to Aug. 1	13	1,526	2,212	494	29	51	24	3.09	4.80	1.19	5.99
19	do	896	1,644	1.8	July 22 to Aug. 2	12	1,317	2,044	430	27	48	10	3.06	4.69	1.15	5.84
20	do	1,020	1,869	1.8	July 23 to Aug. 3	12	1,479	2,336	467	25	46	15	3.17	4.87	1.18	6.05
21	do	960	1,799	1.9	July 25 to Aug. 5	12	1,363	2,212	413	23	43	19	3.30	5.07	1.25	6.32
22	Broilers	1,280	2,159	1.7	July 26 to Aug. 6	12	1,766	2,764	605	28	47	20	2.92	4.46	1.12	5.58
23	do	1,080	1,697	1.6	July 27 to Aug. 7	12	1,469	2,280	583	34	54	26	2.52	3.84	.98	4.82
24	Springers	1,210	2,453	2.0	July 28 to Aug. 8	12	1,560	2,815	362	15	30	39	4.31	6.60	1.76	8.36
25	do	1,020	1,927	1.9	July 29 to Aug. 10	13	1,387	2,334	407	21	40	26	3.41	5.24	1.43	6.67
26	do	320	560	1.8	July 30 to Aug. 6	8	275	667	107	19	33	4	2.57	3.89	1.02	4.91
27	do	320	612	1.9	Aug. 1 to Aug. 9	9	298	678	66	11	21	3	4.52	6.99	1.85	8.84
28	do	1,520	3,045	2.0	Aug. 3 to Aug. 14	12	1,718	3,347	302	10	20	57	5.69	8.96	2.62	11.58
29	do	1,910	4,047	2.1	Aug. 8 to Aug. 20	13	2,349	4,545	498	12	26	44	4.72	7.59	2.34	9.93
30	do	960	1,733	1.8	Aug. 9 to Aug. 18	10	883	1,970	237	14	25	43	3.73	6.03	1.90	7.93

31	...do.....	2,646	5,505	2.1	Aug. 11 to Aug. 22...	12	3,142	6,072	567	10	22	69	5.54	8.85	2.79	11.64
32	...do.....	720	1,468	2.0	Aug. 12 to Aug. 24...	13	1,015	1,717	249	17	35	26	4.08	6.56	2.00	8.56
33	...do.....	1,920	3,836	2.0	Aug. 13 to Aug. 27...	15	3,418	4,800	964	25	50	42	3.55	5.96	1.65	7.61
34	...do.....	1,680	3,380	2.0	Aug. 15 to Aug. 28...	14	2,940	4,139	759	23	45	42	3.87	6.55	1.77	8.32
35	...do.....	1,350	2,839	2.1	Aug. 16 to Aug. 29...	14	2,403	3,550	711	25	53	40	3.38	5.81	1.56	7.37
36	...do.....	761	1,541	2.0	Aug. 17 to Aug. 30...	14	1,400	1,995	454	29	60	17	3.08	5.36	1.39	6.75
37	...do.....	1,040	2,295	2.2	Aug. 18 to Aug. 31...	14	1,945	3,007	712	31	69	12	2.73	4.79	1.23	6.02
38	...do.....	1,600	3,588	2.2	Aug. 20 to Sept. 3....	15	3,232	4,590	1,002	28	63	55	3.23	5.77	1.44	7.21
39	...do.....	320	722	2.3	Aug. 20 to Aug. 29...	10	432	884	162	22	51	9	2.67	4.66	1.20	5.86
40	...do.....	832	2,037	2.5	Aug. 22 to Sept. 4....	14	1,622	2,701	664	33	80	6	2.44	4.41	1.05	5.46
41	...do.....	832	1,880	2.3	Aug. 23 to Sept. 5....	14	1,656	2,475	595	32	72	18	2.78	5.03	1.19	6.22
42	...do.....	1,080	2,340	2.2	Aug. 24 to Sept. 6....	14	2,160	3,005	665	28	62	15	3.25	5.91	1.35	7.26
43	...do.....	896	2,073	2.3	Aug. 26 to Sept. 7....	13	1,604	2,615	542	26	61	11	2.96	5.34	1.24	6.58
44	...do.....	256	555	2.2	Aug. 27 to Sept. 4....	9	315	653	98	18	38	3	3.21	5.83	1.36	7.19
45	...do.....	832	2,053	2.5	Aug. 29 to Sept. 10...	13	1,489	2,088	435	21	52	9	3.42	6.16	1.40	7.56
46	...do.....	1,080	2,548	2.4	Aug. 30 to Sept. 10...	12	1,782	3,205	657	26	61	6	2.71	4.85	1.09	5.94
47	...do.....	1,400	3,206	2.3	Aug. 31 to Sept. 11...	12	2,156	4,064	858	27	61	21	2.51	4.76	1.06	5.82
48	...do.....	1,020	2,181	2.1	Sept. 1 to Sept. 12...	12	1,673	2,704	523	24	51	24	3.20	5.69	1.25	6.94
49	...do.....	1,150	2,487	2.2	Sept. 2 to Sept. 12...	11	1,714	3,135	648	26	56	21	2.65	4.70	1.03	5.73
50	...do.....	1,920	4,359	2.3	Sept. 3 to Sept. 13...	11	2,842	5,337	978	22	51	0	2.91	5.18	1.12	6.30
51	...do.....	384	846	2.2	Sept. 3 to Sept. 10...	8	415	1,058	212	25	55	0	1.96	3.44	.76	4.20
52	...do.....	1,530	3,471	2.3	Sept. 6 to Sept. 14...	9	1,836	4,060	589	17	39	4	3.12	5.61	1.22	6.83
53	...do.....	320	631	2.0	Sept. 6 to Sept. 15...	8	349	764	133	21	42	0	2.62	4.69	.99	6.58
54	...do.....	1,640	3,741	2.3	Sept. 7 to Sept. 18...	12	2,722	4,765	1,015	27	62	17	2.68	4.80	1.07	5.87
55	...do.....	1,280	2,987	2.3	Sept. 8 to Sept. 19...	12	2,189	3,718	731	24	57	18	2.99	5.32	1.17	6.49
56	...do.....	1,400	3,299	2.4	Sept. 9 to Sept. 20...	12	2,436	4,193	894	27	64	25	2.72	4.78	1.05	5.83
57	Roasters ..	1,400	3,912	2.8	Sept. 10 to Sept. 21..	12	2,478	4,601	689	18	49	31	3.60	6.24	1.38	7.62
58	Broilers...	704	1,325	1.9	Sept. 10 to Sept. 24..	15	1,626	1,747	422	32	60	11	3.85	6.54	1.40	7.94
59	Roasters ..	704	1,872	2.7	Sept. 12 to Sept. 22..	11	1,176	2,357	485	26	69	8	2.42	4.12	.93	5.05
60	...do.....	960	2,505	2.6	Sept. 13 to Sept. 22..	10	1,469	3,140	635	25	66	8	2.31	3.92	.89	4.81
61	Broilers...	518	853	1.7	Sept. 13 to Sept. 26..	14	1,166	1,272	419	49	81	9	2.78	4.59	.98	5.57
62	Roasters ..	1,020	2,749	2.7	Sept. 14 to Sept. 24..	11	1,796	3,482	733	27	72	20	2.45	4.06	.89	4.95
63	Broilers...	643	1,011	1.6	Sept. 14 to Sept. 27..	14	1,466	1,512	501	50	78	19	2.93	4.80	1.03	5.83
64	Roasters ..	1,010	2,569	2.5	Sept. 15 to Sept. 25..	11	1,848	3,204	635	25	63	6	2.91	4.76	.99	5.75
65	...do.....	1,280	3,574	2.8	Sept. 17 to Sept. 26..	10	2,314	4,210	636	18	50	7	3.48	5.58	1.09	6.67
66	Broilers...	512	807	1.6	Sept. 17 to Oct. 1....	15	1,290	1,161	354	44	69	8	3.64	5.80	1.23	7.03
67	Roasters ..	896	2,501	2.8	Sept. 19 to Sept. 28..	10	1,541	2,890	389	15	43	0	3.96	6.22	1.29	7.51
68	...do.....	1,400	3,852	2.8	Sept. 20 to Sept. 29..	10	2,380	4,463	611	16	44	10	3.90	6.10	1.31	7.41
69	Broilers...	448	737	1.7	Sept. 20 to Oct. 3....	14	1,075	1,014	277	38	62	15	3.88	6.10	1.33	7.43
70	Roasters ..	768	2,277	3.0	Sept. 21 to Oct. 1....	11	1,444	2,626	349	15	45	5	4.14	6.47	1.39	7.86
71	...do.....	768	2,135	2.8	Sept. 22 to Oct. 2....	11	1,436	2,464	329	15	43	8	4.36	6.84	1.47	8.31
72	...do.....	896	2,543	2.8	Sept. 23 to Oct. 2....	10	1,505	2,943	400	16	45	5	3.76	5.89	1.28	7.17
73	Broilers...	320	545	1.7	Sept. 23 to Oct. 5....	13	717	745	200	37	63	6	3.59	5.68	1.23	6.91
74	Roasters ..	1,530	4,389	2.9	Sept. 24 to Oct. 5....	10	2,555	5,214	825	19	54	16	3.10	4.88	1.08	5.96
75	Broilers...	320	522	1.6	Sept. 24 to Oct. 8....	15	829	710	188	36	59	9	4.41	7.08	1.50	8.58

Details of feeding experiments in 1911 and 1912.—Continued.

EXPERIMENT C, STATION 4, 1911—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1911.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
76	Broilers	320	518	1.6	Sept. 26 to Oct. 9	14	784	711	193	37	60	6	4.06	6.55	1.41	7.96
77	Roosters	960	2,824	2.9	Sept. 27 to Oct. 8	12	1,987	3,389	565	20	59	8	3.52	5.67	1.26	6.93
78	do	1,540	3,834	2.9	Sept. 28 to Oct. 9	12	2,844	4,732	898	23	67	17	3.13	5.09	1.09	6.18
79	Broilers	320	538	1.7	Sept. 28 to Oct. 11	14	797	745	207	39	65	11	3.85	6.28	1.33	7.61
80	Roosters	896	2,668	3.0	Sept. 29 to Oct. 10	12	1,935	3,224	553	21	62	6	3.50	5.73	1.20	6.92
81	Broilers	322	505	1.6	Sept. 29 to Oct. 12	14	811	685	180	36	56	4	4.51	7.41	1.56	8.97
82	Roosters	896	2,740	3.1	Sept. 30 to Oct. 11	12	1,974	1,334	594	22	66	12	3.34	5.47	1.11	6.58
83	do	1,210	3,837	3.2	Oct. 1 to Oct. 12	12	2,602	4,562	725	19	60	22	3.67	6.01	1.22	7.26
84	Broilers	256	401	1.6	Oct. 1 to Oct. 13	13	660	550	158	39	62	2	3.85	6.35	1.30	7.65
85	Roosters	768	2,317	3.0	Oct. 3 to Oct. 13	11	1,567	2,643	326	14	42	9	4.81	8.01	1.63	9.64
86	do	704	2,121	3.0	Oct. 4 to Oct. 15	12	1,563	2,515	394	19	56	2	3.97	6.65	1.32	7.97
87	do	832	2,563	3.1	Oct. 6 to Oct. 16	11	1,689	2,989	426	17	51	9	3.96	6.68	1.31	7.99
88	do	768	2,341	3.1	Oct. 7 to Oct. 17	11	1,551	2,685	344	15	45	10	4.51	7.61	1.50	9.11
89	Broilers	192	313	1.6	Oct. 7 to Oct. 19	13	463	392	79	25	41	9	5.86	9.91	2.01	11.92
90	Roosters	1,340	4,184	3.1	Oct. 8 to Oct. 18	11	2,734	4,817	633	15	47	11	4.32	7.32	1.48	8.80
91	Broilers	704	1,098	1.6	Oct. 8 to Oct. 20	12	1,563	1,457	359	33	51	20	4.35	7.39	1.53	8.92
92	Roosters	640	1,834	2.9	Oct. 10 to Oct. 17	8	944	2,402	568	45	42	8	3.51	5.97	1.27	7.24
93	do	832	2,558	3.1	Oct. 11 to Oct. 20	10	1,548	2,946	388	15	47	6	3.99	6.73	1.52	8.25
94	Broilers	320	529	1.7	Oct. 12 to Oct. 22	11	666	693	164	31	51	3	4.06	6.71	1.56	8.27
95	Roosters	1,020	3,184	3.1	do	11	2,122	3,748	567	18	56	9	3.74	6.19	1.44	7.63
96	do	768	2,356	3.1	Oct. 13 to Oct. 23	11	1,628	2,762	406	17	53	7	4.01	6.62	1.55	8.17
97	Broilers	320	515	1.6	do	11	678	666	154	29	47	4	4.40	7.42	1.74	9.16
98	Roosters	1,340	4,236	3.2	Oct. 15 to Oct. 25	10	2,627	4,904	668	16	50	14	3.93	6.41	1.51	7.98
99	do	704	2,204	3.1	Oct. 17 to Oct. 25	9	1,274	2,456	252	11	36	16	5.06	8.16	2.12	10.28
100	do	768	2,539	3.3	Oct. 18 to Oct. 25	8	1,252	2,854	315	12	41	7	3.97	6.36	1.66	8.02
101	Broilers	192	319	1.7	Oct. 18 to Oct. 30	13	495	426	107	34	56	1	4.63	7.36	1.83	9.19
102	Roosters	768	2,605	3.4	Oct. 20 to Oct. 26	7	1,114	2,820	215	8	28	7	5.18	8.14	2.11	10.28
103	do	832	2,743	3.3	Oct. 21 to Oct. 30	10	1,664	3,021	278	10	33	16	5.99	9.34	2.31	11.65
104	do	832	2,743	3.3	Oct. 22 to Oct. 31	10	1,647	3,064	351	13	42	10	4.69	7.37	1.76	9.13
105	Broilers	256	395	1.5	Oct. 22 to Nov. 1	11	556	491	99	25	39	18	5.62	8.82	2.04	10.86

106	...do.....	192	285	1.5	Oct. 24 to Nov. 3....	11	407	389	104	37	54	7	3.91	6.13	1.42	7.55
107	Roasters ..	1,020	3,315	3.3	Oct. 24 to Nov. 1....	9	1,795	3,653	338	10	33	19	5.31	8.30	1.93	10.23
108	...do.....	1,400	4,494	3.2	Oct. 25 to Nov. 2....	9	2,408	5,051	557	12	40	0	4.32	6.76	1.53	8.29
109	...do.....	832	2,740	3.3	Oct. 26 to Nov. 3....	9	1,414	3,144	404	15	49	12	3.50	5.28	1.20	6.68
110	...do.....	960	3,009	3.1	Oct. 27 to Nov. 5....	10	1,757	3,400	391	13	41	20	4.49	7.02	1.50	8.52
111	...do.....	705	2,269	3.2	Oct. 28 to Nov. 5....	9	1,148	2,574	305	15	43	13	3.76	5.89	1.20	7.09
112	Broilers...	263	419	1.6	Oct. 29 to Nov. 9....	12	579	504	85	20	32	21	6.81	10.65	2.15	12.78
113	Roasters ..	1,210	3,863	3.2	Oct. 29 to Nov. 6....	9	2,021	4,383	520	13	43	14	3.89	6.67	1.23	7.30
114	...do.....	704	2,112	3.0	Oct. 31 to Nov. 7....	8	1,049	2,339	227	11	32	5	4.62	7.22	1.49	8.71
115	...do.....	1,660	4,969	3.0	Nov. 1 to Nov. 8....	8	2,457	5,604	635	13	38	12	3.87	6.04	1.23	7.27
116	Broilers...	320	498	1.6	Nov. 1 to Nov. 14...	14	797	638	140	28	44	21	5.69	8.91	1.87	10.78
117	Roasters ..	768	2,319	3.0	Nov. 2 to Nov. 9....	8	721	2,566	247	11	32	14	4.54	7.09	1.46	8.55
118	...do.....	1,470	4,467	3.0	Nov. 4 to Nov. 14...	11	2,837	4,860	393	9	27	61	7.22	11.33	2.39	13.72
119	Broilers...	256	409	1.6	Nov. 4 to Nov. 16...	13	579	515	106	26	41	16	5.46	8.58	1.91	10.49
120	Roasters ..	1,470	4,746	3.2	Nov. 5 to Nov. 15...	11	2,822	5,301	552	12	38	40	5.08	8.01	1.75	9.76
121	Broilers...	320	556	1.7	Nov. 5 to Nov. 16...	12	666	689	133	24	42	14	5.01	7.86	1.76	9.62
122	Roasters ..	2,110	6,860	3.3	Nov. 7 to Nov. 13...	7	2,532	7,094	234	3	11	109	10.82	17.04	3.52	20.56
123	...do.....	1,790	5,753	3.2	Nov. 8 to Nov. 19...	12	3,654	6,285	532	9	30	66	6.83	10.80	2.56	13.36
124	...do.....	768	2,384	3.1	Nov. 9 to Nov. 20...	12	1,544	2,619	235	10	31	25	6.57	10.43	2.58	13.01
125	...do.....	768	2,434	3.2	Nov. 10 to Nov. 21 ..	12	1,536	2,625	191	8	25	26	8.04	12.79	2.26	16.05
126	...do.....	1,080	3,648	3.4	Nov. 12 to Nov. 23 ..	12	2,160	3,836	188	5	17	52	11.05	18.27	4.94	23.21
127	...do.....	768	2,469	3.2	Nov. 15 to Nov. 26 ..	12	1,528	2,519	50	2	7	54	30.56	49.00	13.52	63.52
128	...do.....	893	2,676	3.0	Nov. 19 to Nov. 27 ..	9	1,348	2,887	211	8	24	27	6.39	10.11	2.79	12.90
129	...do.....	640	2,216	3.5	Nov. 21 to Nov. 30 ..	10	1,088	2,355	139	6	22	16	7.83	12.43	3.87	16.30
130	...do.....	704	2,167	3.1	Nov. 24 to Dec. 3....	10	1,190	2,234	67	3	10	40	17.76	28.27	9.03	37.30
131	...do.....	448	1,252	2.8	Nov. 29 to Dec. 5....	7	520	1,324	72	6	16	17	7.22	11.57	4.04	15.61
132	...do.....	960	3,177	3.3	Dec. 1 to Dec. 10....	10	1,661	3,320	143	5	15	38	11.62	18.59	6.04	24.63
133	...do.....	960	3,400	3.5	Dec. 3 to Dec. 11....	9	1,546	3,564	164	5	17	26	9.43	15.04	4.80	19.84
134	...do.....	576	1,984	3.4	Dec. 6 to Dec. 15....	8	870	2,145	161	8	28	9	5.40	8.59	2.90	11.49

EXPERIMENT C, STATION 4, 1912.

					1912.											
1	Broilers...	640	1,052	1.64	June 22 to July 7....	16	1,267	1,451	399	38	62	10	3.18	5.82	1.96	7.78
2	...do.....	1,280	2,132	1.67	June 26 to July 10...	15	2,368	2,914	782	37	61	17	3.03	5.52	2.36	7.88
3	...do.....	800	1,285	1.61	June 30 to July 15...	16	1,416	1,708	423	33	53	20	3.35	6.11	2.36	8.47
4	...do.....	560	900	1.61	July 2 to July 16....	15	924	1,191	291	32	52	8	3.18	5.83	2.31	8.17
5	...do.....	560	844	1.51	July 3 to July 16....	14	851	1,088	244	29	44	8	3.49	6.40	2.61	9.01
6	...do.....	480	722	1.50	July 4 to July 17....	14	725	902	180	25	38	15	4.03	7.39	2.91	10.30
7	...do.....	560	964	1.72	July 6 to July 21....	16	991	1,181	217	23	39	7	4.57	8.47	2.87	11.34
8	...do.....	560	934	1.67	July 10 to July 22...	13	762	1,133	199	21	36	13	3.83	7.18	2.22	9.40
9	...do.....	480	725	1.51	July 11 to July 23...	13	648	905	180	25	38	10	3.60	6.77	2.06	8.83
10	...do.....	640	1,075	1.68	July 12 to July 23...	12	806	1,278	203	19	32	14	3.97	7.50	2.14	9.64

Details of feeding experiments in 1911 and 1912—Continued.

EXPERIMENT C, STATION 4, 1912—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
11	Broilers...	1,200	1,536	1.28	July 13 to July 24...	12	1,524	1,790	254	17	21	24	6.00	11.34	3.17	14.51
12	...do.....	2,160	3,615	1.67	July 14 to July 26...	13	2,808	4,219	604	17	28	73	4.65	8.80	2.47	11.27
13	...do.....	560	843	1.51	July 16 to July 28...	13	739	938	95	11	17	50	7.78	14.67	3.95	18.62
14	...do.....	960	1,599	1.67	July 17 to July 28...	12	1,162	1,691	92	6	10	90	12.60	23.89	6.37	30.26
15	...do.....	1,600	2,631	1.64	July 17 to July 29...	13	2,080	3,149	518	20	32	44	4.02	7.60	2.04	9.64
16	...do.....	1,680	2,560	1.52	July 20 to July 31...	12	1,982	3,073	513	20	31	70	3.86	7.14	1.77	8.91
17	Springers .	1,680	2,961	1.76	July 21 to Aug. 1....	12	1,966	3,438	477	16	28	59	4.12	7.57	1.90	9.47
18	Broilers...	1,600	2,329	1.46	July 22 to Aug. 2....	12	1,872	2,920	591	25	37	62	3.17	5.79	1.49	7.28
19	...do.....	1,360	2,324	1.71	July 23 to Aug. 4....	13	1,782	2,796	472	20	35	25	3.78	6.83	1.70	8.53
20	...do.....	560	962	1.72	July 24 to Aug. 5....	13	750	1,173	211	22	38	28	3.55	6.40	1.49	7.89
21	...do.....	1,200	2,028	1.69	.....do.....	13	1,608	2,558	530	26	44	27	3.03	5.46	1.27	6.73
22	Springers .	1,680	2,986	1.78	July 24 to Aug. 6....	14	2,470	3,719	733	25	44	22	3.37	6.07	1.38	7.45
23	Broilers...	1,440	2,407	1.67	July 25 to Aug. 7....	14	2,189	3,189	782	32	54	34	2.80	5.03	1.09	6.12
24	...do.....	1,760	2,780	1.58	July 27 to Aug. 8....	13	2,640	3,581	801	29	46	94	3.30	5.93	1.19	7.12
25	...do.....	1,200	2,053	1.71	.....do.....	13	1,800	2,639	586	28	49	37	3.07	5.53	1.11	6.64
26	...do.....	1,680	2,821	1.68	July 28 to Aug. 9....	13	2,587	3,676	855	30	51	51	3.03	5.44	1.04	6.48
27	Springers .	1,200	2,123	1.77	July 29 to Aug. 11...	14	2,052	2,660	537	25	45	28	3.82	6.84	1.32	8.16
28	Broilers...	640	1,004	1.57	July 30 to Aug. 11...	13	1,037	1,343	339	34	53	.....	3.06	5.46	1.02	6.48
29	...do.....	1,760	3,049	1.73	July 31 to Aug. 12...	13	2,869	3,915	866	28	49	18	3.31	5.93	1.10	7.03
30	Springers .	1,120	1,980	1.77	Aug. 1 to Aug. 12....	12	1,714	2,471	491	25	44	26	3.49	6.27	1.14	7.41
31	...do.....	1,600	2,917	1.82	Aug. 2 to Aug. 13....	12	2,480	3,574	657	23	41	26	3.77	6.82	1.22	8.04
32	...do.....	2,000	3,949	1.97	Aug. 5 to Aug. 14....	10	2,600	4,779	830	21	42	17	3.13	5.69	.99	6.68
33	Broilers...	880	1,450	1.65	Aug. 6 to Aug. 14....	9	1,030	1,797	347	24	39	18	2.97	5.40	.96	6.36
34	Springers .	2,560	4,578	1.79	Aug. 4 to Aug. 15....	12	3,968	5,798	1,220	26	48	39	3.25	5.94	1.03	6.97
35	...do.....	2,160	3,861	1.79	Aug. 7 to Aug. 18....	12	3,326	4,921	1,060	28	59	46	3.14	5.73	1.06	6.79
36	...do.....	1,360	2,610	1.92	Aug. 8 to Aug. 19....	12	2,081	3,169	559	21	41	29	3.72	6.76	1.26	8.02
37	...do.....	960	1,879	1.96	Aug. 9 to Aug. 19....	11	1,334	2,253	374	20	39	6	3.57	6.52	1.23	7.75
38	...do.....	1,200	2,361	1.97	Aug. 9 to Aug. 20....	12	1,812	2,869	508	22	42	24	3.57	6.52	1.25	7.77
39	...do.....	1,760	3,372	1.92	Aug. 10 to Aug. 20...	11	2,429	3,947	575	17	33	45	4.22	7.68	1.50	9.18
40	...do.....	1,920	3,579	1.86	Aug. 11 to Aug. 21...	11	2,669	4,451	872	24	45	38	3.06	5.57	1.08	6.65

41	...do.....	1,200	2,336	1.95	Aug. 12 to Aug. 22...	11	1,704	2,864	528	22	44	10	3.23	5.86	1.14	7.00
42	...do.....	880	1,703	1.94	Aug. 10 to Aug. 22...	13	1,470	2,064	361	21	41	14	4.07	7.41	1.44	8.85
43	...do.....	2,320	4,468	1.93	Aug. 14 to Aug. 23...	10	3,016	5,367	899	20	39	17	3.36	6.09	1.21	7.30
44	...do.....	1,200	2,334	1.95	Aug. 15 to Aug. 25...	11	1,728	2,815	481	21	40	5	3.59	6.54	1.32	7.86
45	...do.....	1,200	2,409	2.01	Aug. 16 to Aug. 25...	10	1,560	2,818	409	17	34	3	3.81	6.98	1.41	8.39
46	...do.....	1,760	3,333	1.89	Aug. 17 to Aug. 26...	10	2,288	4,044	711	21	40	88	3.22	5.87	1.19	7.06
47	...do.....	1,760	3,554	2.02	Aug. 18 to Aug. 27...	10	2,270	4,247	693	20	39	24	3.28	5.97	1.24	7.21
48	...do.....	1,680	3,652	2.17	Aug. 18 to Aug. 28...	11	2,335	4,244	590	16	35	7	3.96	7.26	1.54	8.80
49	...do.....	1,520	3,133	2.06	Aug. 20 to Aug. 29...	10	1,961	3,682	549	18	36	17	3.57	6.53	1.41	7.94
50	...do.....	2,080	4,391	2.11	Aug. 21 to Aug. 30...	10	2,683	5,320	929	21	45	21	2.89	5.31	1.14	6.45
51	...do.....	1,360	2,695	1.98	Aug. 22 to Sept. 2...	12	2,081	3,293	598	22	44	17	3.48	6.34	1.41	7.75
52	...do.....	1,800	3,865	2.15	Aug. 23 to Sept. 3...	12	2,700	4,698	833	22	46	21	3.24	5.92	1.34	7.26
53	...do.....	1,600	3,247	2.03	Aug. 24 to Sept. 4...	12	2,384	3,900	653	20	41	25	3.65	6.62	1.49	8.11
54	...do.....	1,760	3,826	2.17	Aug. 25 to Sept. 5...	12	2,622	4,687	861	23	49	9	3.05	5.52	1.21	6.73
55	...do.....	1,760	3,867	2.20	Aug. 26 to Sept. 6...	12	2,622	4,614	747	19	42	21	3.51	6.34	1.41	7.75
56	...do.....	640	1,179	1.84	Aug. 27 to Sept. 8...	13	1,056	1,563	384	33	60	11	2.75	4.93	1.08	6.01
57	...do.....	1,440	2,806	1.95	Aug. 28 to Sept. 8...	12	2,203	3,660	854	30	59	30	2.58	4.62	1.01	5.63
58	...do.....	1,280	2,812	2.20	Aug. 29 to Sept. 9...	12	1,971	3,341	529	19	41	7	3.73	6.68	1.45	8.13
59	...do.....	1,600	3,494	2.18	Aug. 30 to Sept. 9...	11	2,272	4,119	625	18	39	15	3.64	6.50	1.41	7.91
60	...do.....	1,280	2,878	2.25	Aug. 31 to Sept. 10..	11	1,830	3,340	462	16	36	4	3.96	7.07	1.55	8.62
61	...do.....	2,720	6,089	2.24	Sept. 1 to Sept. 11...	11	3,862	7,149	1,060	17	39	15	3.64	6.49	1.44	7.93
62	...do.....	560	1,213	2.17	Sept. 3 to Sept. 12...	10	739	1,508	295	24	53	4	2.51	4.46	.99	5.45
63	...do.....	1,120	2,482	2.22	Sept. 4 to Sept. 15...	12	1,859	3,042	560	23	50	24	3.32	5.88	1.24	7.12
64	...do.....	1,440	3,048	2.12	Sept. 5 to Sept. 16...	12	2,448	3,810	762	25	53	.....	3.21	5.69	1.17	6.86
65	...do.....	1,520	3,254	2.14	Sept. 6 to Sept. 16...	11	2,371	4,080	826	25	54	18	2.87	5.08	1.07	6.15
66	...do.....	1,920	4,316	2.25	Sept. 7 to Sept. 17...	11	3,072	5,243	927	22	48	46	3.31	5.86	1.22	7.08
67	...do.....	1,680	3,904	2.32	Sept. 9 to Sept. 18...	10	2,520	4,827	923	24	55	29	2.73	4.81	1.00	5.81
68	...do.....	1,600	3,751	2.34	Sept. 9 to Sept. 19...	11	2,672	4,597	846	23	53	32	3.16	5.54	1.13	6.67
69	...do.....	1,200	2,596	2.16	Sept. 11 to Sept. 20..	10	1,884	3,385	789	30	66	18	2.39	4.18	.84	5.02
70	...do.....	1,600	3,597	2.25	Sept. 12 to Sept. 22..	11	2,832	4,637	1,040	29	65	6	2.72	4.80	.88	5.68
71	Broilers...	640	790	1.23	Sept. 9 to Sept. 22...	14	1,376	1,096	306	39	48	46	4.50	7.95	1.55	9.50
72	Springers .	1,280	3,027	2.36	Sept. 13 to Sept. 23..	11	2,317	3,807	780	26	61	14	2.97	5.23	.92	6.15
73	...do.....	1,520	3,837	2.52	Sept. 14 to Sept. 23..	10	2,493	4,519	682	18	45	16	3.66	6.46	1.11	7.57
74	...do.....	1,600	3,664	2.29	Sept. 15 to Sept. 24..	10	2,656	4,472	808	22	51	25	3.29	5.82	.99	6.81
75	...do.....	1,440	3,379	2.35	.....do.....	10	2,390	4,107	728	22	51	33	3.28	5.82	.99	6.81
76	...do.....	1,600	3,933	2.46	Sept. 18 to Sept. 25..	8	2,176	4,618	685	17	43	35	3.18	5.65	.91	6.56
77	...do.....	960	2,251	2.34	Sept. 17 to Sept. 25..	9	1,459	2,706	455	20	47	26	3.21	5.72	.95	6.67
78	...do.....	2,160	5,316	2.46	Sept. 19 to Sept. 26..	8	2,916	6,298	982	18	46	10	2.97	5.35	.86	6.21
79	...do.....	1,840	4,691	2.55	Sept. 20 to Sept. 26..	7	2,190	5,458	767	16	42	8	2.86	5.13	.82	5.95
80	...do.....	2,160	5,323	2.46	Sept. 21 to Sept. 29..	9	3,477	6,353	1,030	19	48	31	3.38	5.98	.92	6.90

Details of feeding experiments in 1911 and 1912—Continued.

EXPERIMENT C, STATION 4, 1912—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
81	Springers	1,200	2,981	2.48	Sept. 22 to Sept. 29	8	1,716	3,499	518	17	43	11	3.31	5.88	0.90	6.78
82	do	1,040	2,716	2.61	Sept. 22 to Sept. 30	9	1,695	3,349	633	23	61	2	2.68	4.70	.72	5.42
83	do	2,080	4,943	2.38	do	9	3,390	6,163	1,220	25	59	22	2.78	4.88	.75	5.63
84	do	2,160	5,454	2.53	Sept. 24 to Oct. 1	8	3,197	6,504	1,050	19	48	35	3.04	5.29	.84	6.13
85	do	1,840	4,522	2.46	Sept. 25 to Oct. 2	8	2,723	5,506	984	22	54	9	2.77	4.84	.77	5.61
86	do	2,080	5,387	2.59	Sept. 26 to Oct. 3	8	3,099	6,359	972	18	47	10	3.19	5.56	.90	6.46
87	do	880	2,157	2.45	Sept. 27 to Oct. 3	7	1,162	2,482	325	15	37	5	3.58	6.17	.98	7.15
88	do	1,200	2,916	2.43	Sept. 27 to Oct. 4	8	1,764	3,543	627	22	52	33	2.81	4.92	.80	5.72
89	do	1,840	4,466	2.43	Sept. 28 to Oct. 4	7	2,337	5,099	633	14	34		3.69	6.39	1.05	7.44
90	do	2,800	6,758	2.41	Sept. 29 to Oct. 6	8	3,780	7,898	1,140	17	41	32	3.32	5.92	.93	6.85
91	do	720	1,873	2.60	do	8	972	2,100	227	12	32	14	4.28	7.64	1.21	8.85
92	do	2,720	6,571	2.42	Oct. 1 to Oct. 7	7	3,128	7,701	1,130	17	41	26	2.77	5.03	.82	5.85
93	do	2,080	5,049	2.43	Oct. 2 to Oct. 9	8	2,746	6,046	997	20	48	24	2.75	4.94	.86	5.80
94	do	1,440	3,551	2.47	Oct. 3 to Oct. 9	7	1,642	4,087	536	15	37	17	3.06	5.48	.97	6.45
95	do	800	1,733	2.17	Oct. 3 to Oct. 10	8	1,056	2,044	311	18	39	27	3.40	6.05	1.08	7.13
96	do	2,640	6,581	2.49	Oct. 5 to Oct. 11	7	3,062	7,741	1,160	18	44	19	2.64	4.67	.82	5.49
97	do	2,400	6,552	2.73	Oct. 6 to Oct. 14	9	3,648	7,612	1,060	16	44	24	3.44	6.09	.97	7.06
98	do	1,760	4,167	2.37	Oct. 6 to Oct. 15	10	2,974	5,227	1,060	15	60	16	2.81	5.03	.80	5.83
99	do	1,840	4,620	2.51	Oct. 8 to Oct. 15	8	2,558	5,419	799	17	43	12	3.20	5.64	.92	6.56
100	do	1,440	3,457	2.40	Oct. 9 to Oct. 16	8	2,002	4,066	609	18	42	21	3.29	5.82	.92	6.74
101	Broilers	800	1,482	1.85	Oct. 8 to Oct. 16	9	1,248	1,856	374	25	47	16	3.34	5.90	.96	6.86
102	Springers	1,760	4,408	2.50	Oct. 10 to Oct. 17	8	2,446	5,269	861	20	49	27	2.84	5.01	.78	5.79
103	do	1,920	4,541	2.37	Oct. 11 to 18	8	2,650	5,420	879	19	46	12	2.96	5.35	.83	6.18
104	Broilers	720	1,245	1.73	Oct. 12 to Oct. 20	9	1,123	1,602	357	29	49	15	3.15	5.61	.81	6.42
105	Springers	1,040	2,960	2.85	do	9	1,622	3,430	470	16	45	13	3.45	6.15	.89	7.04
106	Broilers	1,120	1,917	1.71	Oct. 13 to Oct. 23	11	2,128	2,558	641	34	57	14	3.32	5.91	.89	6.80
107	Roasters	1,760	4,972	2.83	Oct. 15 to Oct. 23	9	2,763	5,839	867	17	49	15	3.19	5.64	.89	6.53
108	Broilers	960	1,600	1.67	Oct. 15 to Oct. 24	10	1,690	2,085	485	30	51	17	3.48	6.18	.97	7.15
109	Roasters	1,040	3,156	3.03	Oct. 16 to Oct. 24	9	1,643	3,515	359	11	35	20	4.58	8.14	1.28	9.42
110	Broilers	640	1,139	1.78	Oct. 16 to Oct. 25	10	1,133	1,446	307	27	48	13	3.69	6.52	1.04	7.56

111	Roasters..	1,200	3,676	3.06	Oct. 17 to Oct. 25....	9	1,908	4,169	493	13	41	14	3.87	6.86	1.10	7.96
112	Broilers...	1,120	1,886	1.68	Oct. 17 to Oct. 27....	11	2,173	2,480	594	32	53	20	3.66	6.52	1.06	7.58
113	Roasters..	1,680	4,785	2.85	Oct. 18 to Oct. 27....	10	2,990	5,462	677	14	40	32	4.42	7.87	1.27	9.14
114	...do.....	1,120	3,409	3.04	Oct. 19 to Oct. 28....	10	1,994	3,775	366	11	33	14	5.45	9.73	1.53	11.26
115	Broilers...	560	953	1.70	Oct. 18 to Oct. 28....	11	1,098	1,219	266	28	48	10	4.13	7.35	1.18	8.53
116	Roasters..	1,360	4,118	3.03	Oct. 19 to Oct. 29....	11	2,652	4,636	518	13	38	15	5.12	9.14	1.50	10.64
117	...do.....	1,280	3,867	3.02	Oct. 20 to Oct. 30....	9	2,035	4,213	346	9	27	26	5.88	10.47	1.85	12.32
118	Broilers...	800	1,336	1.67	Oct. 20 to Nov. 4....	16	2,272	1,811	475	36	59	22	4.78	8.52	1.47	9.99
119	...do.....	880	1,581	1.80	Oct. 22 to Nov. 5....	15	2,323	2,010	429	27	49	40	5.41	9.64	1.70	11.34
120	Roasters..	720	2,181	3.03	Oct. 25 to Nov. 6....	13	1,627	2,565	384	18	53	13	4.24	7.50	1.37	8.87
121	Broilers...	480	805	1.68	Oct. 24 to Nov. 6....	14	1,176	1,071	266	33	55	13	4.42	7.83	1.41	9.24
122	Roasters..	1,520	4,688	3.08	Oct. 27 to Nov. 7....	12	3,131	5,281	593	13	39	20	5.28	9.31	1.69	11.00
123	...do.....	800	2,564	3.21	Oct. 26 to Nov. 7....	13	1,792	2,793	229	9	29	11	7.83	13.80	2.52	16.32
124	Broilers...	560	927	1.66	Oct. 27 to Nov. 8....	13	1,249	1,272	345	37	62	3	3.62	6.36	1.19	7.55
125	Roasters..	880	2,734	3.11	Oct. 29 to Nov. 9....	11	1,654	3,053	319	12	36	10	5.19	9.05	1.68	10.73
126	...do.....	1,040	3,223	3.10	Oct. 30 to Nov. 11...	13	2,319	3,624	401	12	39	20	5.78	9.96	1.92	11.88
127	Broilers...	480	793	1.65	.....do.....	13	1,070	1,027	234	30	49	20	4.57	7.88	1.52	9.40
128	Roasters..	720	2,100	2.92	Oct. 31 to Nov. 12...	13	1,627	2,416	316	15	44	13	5.15	8.77	1.69	10.46
129	Broilers...	480	785	1.64	.....do.....	13	1,085	1,028	243	31	51	27	4.47	7.60	1.46	9.06
130	...do.....	640	1,035	1.62	Nov. 3 to Nov. 14...	12	1,318	1,348	313	30	49	37	4.21	6.10	1.37	7.47
131	Roasters..	1,280	4,043	3.16	.....do.....	12	2,637	4,578	535	13	42	23	4.93	8.30	1.60	9.90
132	...do.....	880	2,800	3.18	Nov. 5 to Nov. 15...	11	1,681	3,156	356	13	40	11	4.72	7.81	1.58	9.39
133	...do.....	960	2,828	2.95	Nov. 6 to Nov. 17...	12	1,997	3,213	385	14	40	16	5.19	8.58	1.72	10.30
134	Broilers...	720	1,264	1.76	Nov. 5 to Nov. 17...	13	1,678	1,622	358	28	50	22	4.69	7.46	1.49	8.95
135	...do.....	400	633	1.58	Nov. 6 to Nov. 18...	13	900	843	210	33	53	10	4.29	7.10	1.45	8.55
136	Roasters..	800	2,469	3.09	Nov. 8 to Nov. 18...	11	1,536	2,781	312	13	39	10	4.92	8.23	1.69	9.92
137	Broilers...	400	652	1.63	Nov. 8 to Nov. 19...	12	840	849	197	30	49	8	4.26	7.11	1.48	8.59
138	...do.....	400	674	1.69	Nov. 9 to Nov. 20...	12	844	943	269	40	67	3	3.14	5.22	1.10	6.32
139	Roasters..	1,920	6,037	3.14	Nov. 10 to Nov. 20..	11	3,725	6,777	740	12	39	25	5.03	8.35	1.74	10.09
140	...do.....	640	1,973	3.08	Nov. 12 to Nov. 21..	10	1,120	2,165	192	10	30	10	5.83	9.70	2.10	11.80
141	Broilers...	560	890	1.59	Nov. 10 to Nov. 21..	12	1,170	1,206	316	35	56	10	3.70	6.17	1.31	7.48
142	Roasters..	1,040	3,338	3.21	Nov. 13 to Nov. 25..	13	2,319	3,672	334	7	32	40	6.94	11.40	2.46	13.86
143	...do.....	880	2,822	3.21	Nov. 14 to Nov. 25..	12	1,804	3,103	281	10	32	20	6.42	10.52	2.28	12.80
144	...do.....	1,200	4,179	3.48	Nov. 15 to Nov. 26..	12	2,436	4,419	240	6	20	36	10.15	16.65	3.65	20.30
145	...do.....	2,160	7,304	3.38	Nov. 17 to Nov. 28..	12	4,277	7,730	426	6	20	58	10.04	16.38	3.70	20.08
146	Broilers...	320	536	1.68	Nov. 15 to Nov. 28..	14	752	688	152	28	48	17	4.95	8.09	1.79	9.88
147	...do.....	640	1,038	1.62	Nov. 16 to Nov. 28..	13	1,376	1,284	246	24	38	30	5.59	9.16	2.06	11.22

Details of feeding experiments in 1911 and 1912—Continued.

EXPERIMENT D, STATION 2, 1911.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1911.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
1	Broilers	480	831	1.7	July 25 to Aug. 7	14	979	1,143	312	38	65	3	3.14	5.98	1.26	7.15
2	do	800	1,379	1.7	July 27 to Aug. 10	15	1,664	1,863	484	35	61	9	3.44	6.45	1.29	7.74
3	Springers	960	2,008	2.1	July 28 to Aug. 11	15	1,968	2,519	511	25	53	21	3.85	7.46	1.45	8.91
4	do	1,360	2,452	1.8	July 29 to Aug. 14	17	3,033	3,350	898	37	66	18	3.38	6.63	1.29	7.92
5	do	800	1,401	1.8	July 30 to Aug. 14	16	1,688	1,853	452	32	57	26	3.73	7.35	1.43	8.78
6	do	640	1,145	1.8	Aug. 1 to Aug. 15	15	1,286	1,541	396	35	62	14	3.25	6.37	1.23	7.60
7	do	1,120	2,129	1.9	Aug. 2 to Aug. 16	15	2,262	2,608	479	23	43	56	4.72	9.24	1.73	10.97
8	do	720	1,346	1.9	Aug. 4 to Aug. 17	14	1,310	1,618	272	20	38	23	4.82	9.61	1.80	11.41
9	do	1,500	2,906	1.9	Aug. 5 to Aug. 18	14	2,745	3,464	558	19	37	43	4.92	9.79	1.83	11.62
10	do	1,880	3,599	1.9	Aug. 6 to Aug. 20	15	3,666	4,597	998	28	53	50	3.67	7.35	1.41	8.76
11	do	400	718	1.8	Aug. 8 to Aug. 22	15	764	920	202	28	51	14	3.78	7.56	1.58	9.14
12	do	1,100	2,102	1.9	Aug. 11 to Aug. 24	14	2,035	2,726	624	30	57	28	3.26	6.56	1.36	7.92
13	do	2,540	5,182	2.0	Aug. 12 to Aug. 27	16	5,613	6,516	1,334	26	53	96	4.21	8.43	1.73	10.16
14	do	560	1,122	2.0	Aug. 15 to Aug. 29	15	1,193	1,501	379	34	68	13	3.15	6.32	1.33	7.65
15	do	560	1,234	2.2	Aug. 18 to Aug. 31	14	1,142	1,592	358	29	64	15	3.19	6.48	1.36	7.84
16	do	1,600	3,533	2.2	Aug. 20 to Sept. 3	15	3,584	4,517	984	28	62	32	3.64	7.41	1.50	8.91
17	do	832	1,857	2.2	Aug. 24 to Sept. 5	13	1,639	2,403	546	29	66	9	3.00	6.05	1.17	7.22
18	do	1,150	2,676	2.3	Aug. 24 to Sept. 7	14	2,373	3,434	758	28	66	9	3.13	6.39	1.22	7.61
19	do	1,020	2,401	2.4	Aug. 26 to Sept. 7	13	1,925	3,066	665	28	65	13	2.89	5.79	1.14	6.93
20	do	1,470	3,238	2.2	Aug. 27 to Sept. 10	15	3,165	4,321	1,083	33	74	24	2.92	5.76	1.11	6.87
21	do	1,100	2,510	2.3	Aug. 29 to Sept. 6	9	1,408	3,045	535	21	49	5	2.63	5.35	1.01	6.36
22	do	1,060	2,399	2.3	Aug. 31 to Sept. 13	14	2,162	3,158	759	32	72	11	2.85	5.67	1.06	6.73
23	do	1,140	2,683	2.4	Sept. 1 to Sept. 14	14	2,311	3,279	596	22	52	19	3.88	7.71	1.48	9.19
24	do	1,480	3,202	2.2	Sept. 2 to Sept. 11	10	2,161	3,997	795	25	54	24	2.72	5.31	.99	6.30
25	do	1,380	3,162	2.3	Sept. 3 to Sept. 12	10	1,975	3,870	708	22	51	13	2.79	5.46	1.04	6.50
26	Broilers	512	1,065	2.1	Sept. 6 to Sept. 19	14	1,055	1,418	353	33	69	17	2.99	6.01	1.13	7.14
27	do	768	1,419	1.9	Sept. 7 to Sept. 20	14	1,628	1,934	515	36	67	33	3.16	6.38	1.18	7.56
28	Roasters	572	1,278	2.2	Sept. 7 to Sept. 15	9	744	1,562	284	22	50	12	2.62	5.26	1.01	6.27
29	Broilers	560	1,120	2.0	Sept. 8 to Sept. 21	14	1,193	1,430	310	28	55	10	3.85	7.86	1.45	9.31
30	Roasters	864	2,301	2.7	Sept. 8 to Sept. 15	8	994	2,483	182	8	21	15	5.46	11.10	2.14	13.24

31	Broilers...	800	1,616	2.0	Sept. 9 to Sept. 22...	14	1,696	2,075	459	28	57	31	3.70	7.65	1.39	9.04
32	...do.....	1,020	2,000	2.0	Sept. 10 to Sept. 24..	15	2,387	2,618	618	31	61	31	3.86	8.09	1.42	9.51
33	Roasters..	1,230	3,264	2.7	Sept. 10 to Sept. 17..	8	1,439	3,710	446	14	36	15	3.23	6.68	1.24	7.92
34	...do.....	952	2,459	2.6	Sept. 12 to Sept. 19..	8	1,142	2,800	341	14	36	22	3.35	6.95	1.28	8.23
35	Broilers...	800	1,426	1.8	Sept. 13 to Sept. 26..	14	1,816	1,940	514	36	64	41	3.53	7.38	1.29	8.67
36	Roasters..	1,480	3,741	2.5	Sept. 13 to Sept. 22..	10	2,294	4,207	466	12	32	61	4.92	10.13	1.81	11.94
37	Broilers...	500	853	1.7	Sept. 14 to Sept. 27..	14	1,160	1,205	352	41	70	14	3.30	6.95	1.19	8.14
38	Roasters..	1,140	3,119	2.7	Sept. 14 to Sept. 22..	9	1,619	3,502	383	12	34	30	4.23	8.78	1.52	10.30
39	...do.....	1,230	3,264	2.7	Sept. 15 to Sept. 24..	10	2,030	3,978	714	22	58	14	2.84	5.96	.98	6.94
40	Broilers...	380	585	1.5	Sept. 15 to Sept. 28..	14	889	826	241	41	63	13	3.69	7.81	1.34	9.15
41	Roasters..	600	1,707	2.9	Sept. 16 to Sept. 24..	9	900	1,940	233	14	39	3	3.86	8.06	1.34	9.40
42	...do.....	1,350	3,754	2.8	Sept. 17 to Sept. 25..	9	2,025	4,315	561	15	42	10	3.61	7.60	1.28	8.88
43	Broilers...	480	869	1.8	Sept. 17 to Oct. 1....	15	1,219	1,198	329	38	69	12	3.71	7.78	1.34	9.12
44	Roasters..	878	2,375	2.7	Sept. 19 to Sept. 26..	8	1,212	2,827	452	19	51	3	2.68	5.73	.55	6.68
45	...do.....	572	1,554	2.7	Sept. 21 to Sept. 28..	8	784	1,708	154	10	27	8	5.09	10.96	1.90	12.86
46	Broilers...	320	608	1.9	Sept. 21 to Oct. 4....	14	784	788	180	30	56	7	4.36	9.28	1.58	10.86
47	Roasters..	832	2,269	2.7	Sept. 22 to Sept. 29..	8	1,140	2,623	354	16	43	0	3.22	6.91	1.20	8.11
48	Broilers...	400	690	1.7	Sept. 22 to Oct. 5....	14	1,000	888	198	29	50	9	5.05	10.69	1.80	12.49
49	...do.....	320	488	1.5	Sept. 23 to Oct. 6....	14	806	673	185	38	58	5	4.36	9.25	1.56	10.81
50	Roasters..	1,020	2,856	2.8	Sept. 23 to Oct. 1....	9	1,601	3,363	507	18	50	6	3.16	6.68	1.17	7.85
51	Broilers...	320	549	1.7	Sept. 24 to Oct. 8....	15	870	739	190	35	59	6	4.58	9.58	1.63	11.21
52	Roasters..	1,380	3,821	2.8	Sept. 24 to Oct. 2....	9	2,167	4,604	783	20	57	4	2.77	5.83	1.02	6.85
53	...do.....	1,460	4,129	2.8	Sept. 26 to Oct. 3....	8	2,073	4,657	528	13	36	14	3.93	7.99	1.44	9.43
54	Broilers...	340	562	1.7	Sept. 27 to Oct. 10...	14	887	783	221	39	65	9	4.01	8.23	1.37	9.60
55	Roasters..	1,050	2,827	2.7	Sept. 27 to Oct. 4....	8	1,481	3,272	445	16	42	14	3.33	7.06	1.23	9.29
56	...do.....	1,540	4,315	2.8	Sept. 28 to Oct. 5....	8	2,218	5,144	829	19	54	27	2.68	5.59	.95	6.54
57	Broilers...	600	1,002	1.7	Sept. 28 to Oct. 11...	14	1,578	1,389	387	39	65	14	4.08	8.36	1.36	9.72
58	Roasters..	1,440	3,963	2.8	Sept. 29 to Oct. 6....	8	2,117	4,638	675	17	47	9	3.14	6.57	1.07	7.64
59	Broilers...	340	534	1.6	Sept. 29 to Oct. 12...	14	915	757	223	42	66	5	4.10	8.35	1.33	9.68
60	Roasters..	1,080	3,337	3.1	Oct. 2 to Oct. 9.....	8	1,663	3,699	362	11	34	8	4.59	9.34	1.52	10.86
61	...do.....	896	2,593	2.9	Oct. 3 to Oct. 19....	8	1,416	2,959	366	14	41	8	3.87	7.81	1.25	9.06
62	...do.....	1,790	5,329	3.0	Oct. 4 to Oct. 11....	8	2,828	6,073	744	14	42	11	3.80	7.67	1.20	8.87
63	Broilers...	480	792	1.7	Oct. 5 to Oct. 18....	14	1,525	1,073	280	35	58	7	4.73	9.84	1.53	11.37
64	Roasters..	2,140	6,178	2.9	Oct. 5 to Oct. 12....	8	3,445	7,105	927	15	43	10	3.72	7.41	1.13	8.54
65	...do.....	684	2,109	3.1	Oct. 7 to Oct. 13....	7	985	2,357	248	12	36	8	3.97	7.89	1.21	9.10
66	...do.....	2,170	6,653	3.1	Oct. 8 to Oct. 15....	8	3,515	7,470	817	12	38	27	4.30	8.69	1.33	10.02
67	Broilers...	320	574	1.8	Oct. 8 to Oct. 22....	15	938	757	183	32	57	9	5.13	10.87	1.69	12.56
68	Roasters..	956	2,856	3.0	Oct. 10 to Oct. 17....	8	1,530	3,254	398	14	42	4	3.84	8.22	1.23	9.45
69	...do.....	1,210	3,613	3.0	Oct. 11 to Oct. 18....	8	1,888	4,146	533	15	44	11	3.54	7.67	1.18	8.85
70	...do.....	1,860	5,795	3.1	Oct. 12 to Oct. 19....	8	2,883	6,581	786	14	42	11	3.67	8.00	1.23	9.23
71	...do.....	1,330	3,982	3.0	Oct. 13 to Oct. 20....	8	2,035	4,580	598	15	45	7	3.40	7.54	1.18	8.72
72	...do.....	1,120	3,590	3.2	Oct. 14 to Oct. 22....	9	1,893	4,107	517	14	46	4	3.66	8.14	1.30	9.44
73	Broilers...	240	385	1.6	Oct. 15 to Oct. 29....	15	706	542	157	41	65	10	4.50	10.00	1.65	11.65
74	Roasters..	1,400	4,399	3.2	Oct. 15 to Oct. 23....	9	2,408	4,856	457	10	33	29	5.27	11.73	1.84	13.57
75	...do.....	1,460	4,487	3.1	Oct. 17 to Oct. 24....	8	2,263	5,032	545	12	37	15	4.15	9.27	1.45	10.72

Details of feeding experiments in 1911 and 1912—Continued.

EXPERIMENT D, STATION 2, 1911—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1911.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
76	Roasters..	1,020	3,146	3.1	Oct. 18 to Oct. 25....	8	1,601	3,514	268	12	36	8	4.35	9.48	1.55	11.03
77	...do.....	1,610	5,029	3.1	Oct. 19 to Oct. 26....	8	2,560	5,649	620	12	39	18	4.13	8.93	1.28	10.41
78	Broilers...	400	649	1.6	Oct. 20 to Nov. 2....	14	1,080	844	195	30	49	18	5.55	12.29	2.26	14.55
79	Roasters..	960	3,201	3.3	Oct. 20 to Oct. 27...	8	1,546	3,508	307	9	32	11	5.04	10.91	1.84	12.75
80	...do.....	956	3,014	3.2	Oct. 21 to Oct. 27....	7	1,358	3,388	374	12	39	7	3.63	7.82	1.33	9.15
81	...do.....	1,280	4,027	3.2	Oct. 22 to Oct. 29....	8	2,099	4,544	517	13	40	19	4.06	8.96	1.54	10.50
82	Broilers...	320	537	1.7	Oct. 22 to Nov. 3....	13	806	734	197	37	62	12	4.09	9.08	1.71	10.79
83	Roasters..	832	2,524	3.0	Oct. 24 to Oct. 31....	8	1,290	2,867	343	14	41	13	3.76	8.32	1.62	9.34
84	...do.....	1,470	4,642	3.2	Oct. 26 to Nov. 2....	8	2,205	5,155	513	11	35	24	4.30	9.77	1.92	11.79
85	...do.....	1,340	4,414	3.3	Oct. 29 to Nov. 5....	8	1,876	4,879	465	11	35	28	4.03	8.96	1.85	10.81
86	...do.....	1,280	3,944	3.1	Nov. 1 to Nov. 7....	7	1,574	4,273	329	8	26	8	4.79	10.58	1.99	12.57
87	...do.....	1,340	4,231	3.2	Nov. 2 to Nov. 8....	7	1,675	4,762	531	13	40	12	3.15	6.79	1.26	8.05
88	...do.....	1,140	3,817	3.4	Nov. 4 to Nov. 9....	6	1,186	4,120	303	8	27	15	3.91	8.28	1.50	9.78
89	...do.....	1,700	5,590	3.3	Nov. 7 to Nov. 13 ...	7	2,227	6,044	454	8	27	24	4.91	9.92	1.57	11.49
90	...do.....	1,800	5,624	3.1	Nov. 8 to Nov. 14 ...	7	2,358	6,086	462	8	26	18	5.10	10.09	1.68	11.77
91	...do.....	2,040	6,482	3.2	Nov. 9 to Nov. 15...	7	2,754	7,242	760	12	37	8	3.62	7.41	1.15	8.56
92	...do.....	2,130	6,768	3.2	Nov. 10 to Nov. 16..	7	2,876	7,385	617	9	29	33	4.66	9.46	1.52	10.98
93	...do.....	1,330	4,459	3.4	Nov. 11 to Nov. 19..	9	2,221	4,778	319	7	24	8	6.96	14.47	2.50	16.97
94	...do.....	1,240	3,766	3.0	Nov. 12 to Nov. 19...	8	1,872	4,066	300	8	24	23	6.24	13.06	2.31	15.37
95	...do.....	1,210	3,595	3.0	Nov. 15 to Nov. 21..	7	1,525	3,971	376	11	31	16	4.06	8.88	1.64	10.52
96	...do.....	1,340	4,062	3.0	Nov. 17 to Nov. 22...	6	1,380	4,374	312	8	23	13	4.42	9.66	1.89	11.55
97	...do.....	1,340	4,316	3.2	Nov. 19 to Nov. 24...	6	1,434	4,666	350	8	26	15	4.10	8.77	1.76	10.53
98	...do.....	1,080	3,596	3.3	Nov. 22 to Nov. 27...	6	1,220	3,786	190	5	18	17	6.42	13.47	2.62	16.09
99	...do.....	1,530	5,528	3.6	Nov. 24 to Nov. 30...	7	1,958	5,645	117	2	8	27	16.74	35.31	6.80	42.11
100	...do.....	1,080	3,592	3.3	Nov. 26 to Dec. 1....	6	1,112	3,914	322	9	30	4	3.45	7.48	1.41	8.89
101	...do.....	1,530	5,114	3.3	Nov. 29 to Dec. 4....	6	1,760	5,593	479	9	31	21	3.67	8.08	1.34	9.42
102	...do.....	896	3,416	3.8	Dec. 3 to Dec. 8.....	6	1,030	3,488	72	2	8	16	14.31	30.86	6.72	37.58
103	...do.....	768	2,449	3.2	Dec. 6 to Dec. 11....	6	914	2,667	218	9	28	15	4.19	9.06	2.39	11.45

					1912.											
1	Springers.	800	1,488	1.86	Aug. 7 to Aug. 20....	14	1,512	1,834	346	23	43	17	4.37	10.27	1.66	11.93
2	...do.....	480	919	1.91	Aug. 6 to Aug. 20....	15	974	1,120	201	22	42	7	4.85	11.51	1.86	13.37
3	...do.....	1,840	3,496	1.90	Aug. 8 to Aug. 23....	16	2,938	4,536	1,040	30	57	31	3.79	8.90	1.36	10.26
4	...do.....	400	786	1.97	Aug. 10 to Aug. 25..	16	812	960	174	22	44	15	4.67	10.92	1.68	12.60
5	...do.....	640	1,104	1.73	Aug. 9 to Aug. 25....	17	1,440	1,485	381	35	60	6	3.78	8.78	1.36	10.14
6	...do.....	1,600	2,882	1.80	Aug. 11 to Aug. 26..	16	3,232	3,529	647	22	40	45	4.99	11.67	1.83	13.50
7	...do.....	640	1,234	1.93	Aug. 13 to Aug. 27..	15	1,171	1,532	298	24	47	19	3.93	9.15	1.44	10.59
8	...do.....	1,040	1,957	1.88	Aug. 14 to Aug. 28..	15	1,862	2,455	498	25	48	28	3.74	8.73	1.38	10.11
9	...do.....	320	621	1.94	Aug. 16 to Aug. 29..	14	515	665	44	7	14	18	11.70	27.20	4.50	31.70
10	...do.....	400	831	2.08	Aug. 15 to Aug. 29..	15	704	949	118	14	30	24	5.97	13.93	2.24	16.17
11	...do.....	800	1,623	2.03	Aug. 17 to Aug. 30..	14	1,264	1,853	230	14	29	35	5.50	12.80	2.19	14.99
12	...do.....	1,480	3,678	2.49	Aug. 19 to Sept. 1...	14	2,383	4,521	843	23	57	47	2.83	6.48	1.12	7.60
13	...do.....	580	1,175	2.03	Aug. 22 to Sept. 2...	12	818	1,446	271	23	47	11	3.02	6.83	1.20	8.03
14	...do.....	660	1,414	2.14	Aug. 21 to Sept. 2...	13	1,023	1,667	253	18	38	14	4.04	9.21	1.54	10.75
15	...do.....	820	1,631	1.99	Aug. 20 to Sept. 2...	14	1,337	2,000	369	23	45	12	3.62	8.24	1.42	9.66
16	...do.....	704	1,554	2.21	Aug. 23 to Sept. 3...	12	1,007	1,758	204	13	29	9	4.94	11.04	1.97	13.01
17	...do.....	704	1,495	2.12	Aug. 24 to Sept. 3...	11	915	1,767	272	18	39	6	3.36	7.48	1.37	8.85
18	...do.....	448	1,000	2.23	Aug. 27 to Sept. 4...	9	483	1,196	196	20	44	3	2.46	5.51	1.03	6.54
19	...do.....	2,140	4,576	2.14	Aug. 25 to Sept. 4...	11	2,761	5,464	888	19	42	30	3.11	6.96	1.30	8.26
20	...do.....	640	1,227	1.92	Aug. 29 to Sept. 8...	11	864	1,498	271	22	42	5	3.19	7.11	1.42	8.53
21	...do.....	1,280	2,689	2.10	Aug. 28 to Sept. 8...	12	1,869	3,184	495	18	39	12	3.78	8.43	1.68	10.11
22	...do.....	448	922	2.06	Aug. 31 to Sept. 9...	10	556	1,104	182	20	41	4	3.06	7.34	1.40	8.74
23	...do.....	896	1,897	2.12	Aug. 31 to Sept. 10..	11	1,210	2,052	155	8	17	8	7.81	17.57	3.64	21.21
24	...do.....	3,380	7,334	2.17	Sept. 1 to Sept. 11...	11	4,664	8,424	1,090	15	32	23	4.28	9.80	2.05	11.85
25	...do.....	240	543	2.26	Sept. 3 to Sept. 11...	9	276	623	80	15	3	13	3.45	10.95	1.71	12.66
26	...do.....	692	1,443	2.09	Sept. 4 to Sept. 15...	12	1,135	1,763	320	22	46	10	3.55	8.07	1.62	9.69
27	...do.....	512	1,123	2.19	Sept. 5 to Sept. 15...	11	778	1,352	229	20	45	20	3.40	7.74	1.54	9.28
28	...do.....	1,470	3,235	2.20	Sept. 6 to Sept. 16...	11	2,323	4,095	860	27	59	35	2.70	6.14	1.16	7.30
29	...do.....	1,760	3,871	2.20	Sept. 7 to Sept. 17...	11	2,851	4,725	854	22	49	33	3.34	7.42	1.38	8.80
30	...do.....	1,380	3,084	2.23	Sept. 8 to Sept. 18...	11	2,318	3,757	673	22	49	38	3.44	7.57	1.33	8.90
31	...do.....	384	802	2.09	Sept. 10 to Sept. 18..	9	5,530	1,007	205	26	53	4	2.70	5.94	1.00	6.94
32	...do.....	704	1,639	2.33	Sept. 11 to Sept. 18..	8	936	2,064	425	26	60	4	2.20	4.79	.78	5.57
33	...do.....	576	1,322	2.29	Sept. 12 to Sept. 19..	8	766	1,540	218	16	38	1	3.51	7.43	1.16	8.59
34	...do.....	896	2,160	2.41	Sept. 13 to Sept. 19..	7	1,057	2,541	381	18	43	7	2.77	5.76	.87	6.63
35	...do.....	576	1,326	2.30	Sept. 14 to Sept. 20..	7	691	1,600	274	21	48	2	2.52	5.17	.78	5.95
36	...do.....	512	1,352	2.64	Sept. 17 to Sept. 22..	6	532	1,551	199	15	39	.....	2.67	5.22	.77	5.99
37	...do.....	2,010	5,028	2.50	Sept. 18 to Sept. 24..	7	2,492	5,934	906	18	45	46	2.75	5.56	.78	6.34
38	...do.....	3,410	8,577	2.52	Sept. 20 to Sept. 27..	8	5,115	9,907	1,330	16	39	30	3.85	7.85	1.00	8.85
39	...do.....	2,910	7,167	2.46	Sept. 21 to Sept. 30..	10	5,733	8,737	1,570	22	54	34	3.65	7.41	.85	8.26
40	...do.....	2,580	6,516	2.52	Sept. 21 to Oct. 1....	11	5,728	8,046	1,530	24	59	20	3.74	7.45	.86	8.31

Details of feeding experiments in 1911 and 1912—Continued

EXPERIMENT D, STATION 2, 1912—Continued.

Lot.	Class.	Number in.	Total weight in.	Average weight in.	Dates fed.	Days fed.	Total feed.	Total weight out.	Total gain.	Per cent gain.	Gain per 100 head.	Dead.	Grain per pound of gain.	Total cost of feed per pound of gain.	Cost of labor per pound of gain.	Total cost per pound of gain.
		Head.	*Pounds.*	*Pounds.*	1912.		*Pounds.*	*Pounds.*	*Pounds.*	*Per cent.*	*Pounds.*	*Head.*	*Pounds.*	*Cents.*	*Cents.*	*Cents.*
41	Springers	2,780	7,100	2.55	Sept. 23 to Oct. 2	10	5,782	8,560	1,460	21	53	39	3.96	7.90	0.90	8.80
42	do	1,240	3,100	2.50	Sept. 24 to Oct. 3	10	2,616	3,811	711	23	57	20	3.68	7.27	.84	8.11
43	do	960	2,439	2.54	Sept. 25 to Oct. 4	10	1,997	2,928	489	20	51	5	4.08	8.11	.94	9.05
44	do	1,470	3,815	2.60	Sept. 26 to Oct. 6	11	3,293	4,503	688	18	47	15	4.79	9.57	1.13	10.70
45	do	576	1,434	2.49	Sept. 27 to Oct. 6	10	1,158	1,775	341	24	59	6	3.40	6.82	.81	7.63
46	do	4,180	10,571	2.53	Sept. 29 to Oct. 8	10	8,444	12,741	2,170	21	52	38	3.89	7.78	.96	8.74
47	do	1,990	5,247	2.64	Sept. 29 to Oct. 9	11	4,438	6,065	818	16	41	30	5.43	10.83	1.36	12.19
48	do	660	1,772	2.68	Oct. 1 to Oct. 9	9	1,175	2,092	320	18	48	4	3.67	7.34	.99	8.33
49	do	1,840	5,036	2.74	Oct. 3 to Oct. 11	9	3,110	5,603	567	11	31	36	5.49	11.23	1.53	12.76
50	do	1,540	4,149	2.69	Oct. 5 to Oct. 15	11	3,265	4,754	605	15	39	28	5.40	10.89	1.38	12.27
51	do	800	2,315	2.89	do	11	1,696	2,692	377	16	47	16	4.50	9.07	1.15	10.22
52	do	1,500	4,232	2.82	Oct. 6 to Oct. 16	11	3,210	4,870	638	15	43	28	5.03	10.11	1.25	11.36
53	do	2,390	6,796	2.84	Oct. 9 to Oct. 21	13	6,118	7,946	1,150	17	48	55	5.32	10.21	1.31	11.52
54	do	1,080	2,789	2.58	Oct. 11 to Oct. 22	12	2,506	3,331	542	19	50	23	4.62	8.79	1.16	9.95
55	do	1,180	3,181	2.70	Oct. 10 to Oct. 23	14	3,245	3,579	398	13	34	28	8.15	15.60	2.02	17.62
56	do	960	2,606	2.71	Oct. 11 to Oct. 23	13	2,419	3,036	430	17	45	39	5.63	10.72	1.41	12.13
57	do	1,920	5,198	2.71	Oct. 11 to Oct. 24	14	5,203	6,134	936	18	49	42	5.56	10.48	1.40	11.88
58	do	400	1,163	2.66	Oct. 11 to Oct. 25	15	1,164	1,342	179	15	45	13	6.50	12.16	1.65	13.81
59	do	940	2,686	2.86	do	15	2,735	3,175	489	18	52	23	5.59	10.46	1.42	11.88
60	do	480	1,321	2.75	Oct. 13 to Oct. 27	15	1,397	1,472	151	11	31	15	9.25	17.13	2.32	19.45
61	do	960	2,869	2.99	do	15	2,794	3,109	240	8	25	45	11.64	21.56	2.92	24.48
62	do	1,600	4,833	3.02	Oct. 17 to Oct. 29	13	3,984	5,292	459	10	29	45	8.68	15.83	2.30	18.13
63	do	1,040	3,205	3.08	Oct. 19 to Oct. 30	12	2,423	3,484	279	9	27	25	8.69	15.58	2.27	17.85
64	do	1,680	5,077	3.02	Oct. 20 to Oct. 31	12	3,965	5,725	648	13	39	32	6.12	11.09	1.63	12.72
65	do	1,300	4,203	3.23	Oct. 22 to Nov. 1	11	2,860	4,435	232	6	18	44	12.33	22.75	3.47	26.22
66	do	768	2,534	3.30	do	11	1,690	2,895	361	14	47	8	4.68	8.64	1.32	9.96
67	do	924	3,004	3.25	Oct. 25 to Nov. 3	10	1,894	3,284	280	9	30	.....	6.76	12.90	1.98	14.88
68	do	2,280	7,701	3.38	Oct. 29 to Nov. 4	9	4,264	8,427	726	9	32	38	5.87	11.37	1.76	13.13
69	do	1,060	3,446	3.25	Oct. 30 to Nov. 5	7	1,643	3,843	397	12	38	10	4.14	8.04	1.34	9.38
70	do	512	1,373	2.68	Oct. 30 to Nov. 6	8	906	1,506	133	10	26	2	6.81	13.36	2.35	15.71

71	...do.....	572	1,844	3.22	Oct. 31 to Nov. 6....	7	881	2,036	192	10	34	3	4.59	9.15	1.64	10.79
72	...do.....	1,470	4,862	3.31	Nov. 2 to Nov. 7....	6	1,882	5,324	462	10	31	10	4.07	8.31	1.62	9.93
73	...do.....	1,660	5,600	3.37	Nov. 5 to Nov. 10...	6	2,158	5,899	299	5	18	13	7.22	13.82	3.05	16 87
74	...do.....	1,470	4,762	3.24	Nov. 6 to Nov. 11...	6	1,882	5,088	326	7	22	7	5.77	11.09	2.52	13.61
75	...do.....	768	2,559	3.33	Nov. 7 to Nov. 12...	6	975	2,695	136	5	18	5	7.17	13.66	3.16	16.82
76	...do.....	1,720	5,978	3.48	Nov. 8 to Nov. 13...	6	2,305	6,353	375	6	22	11	6.15	11.60	2.61	14.21
77	...do.....	1,980	6,633	3.35	Nov. 9 to Nov. 14...	6	2,752	7,203	570	9	29	15	4.83	9.34	1.98	11.32
78	...do.....	2,170	7,210	3.32	Nov. 10 to Nov. 17..	8	3,819	7,699	489	7	23	24	7.81	14.60	3.28	17.88
79	...do.....	512	1,758	3.43	Nov. 12 to Nov. 18...	7	799	1,923	165	9	32	3	4.84	8.59	2.02	10.61
80	...do.....	1,020	3,601	3.53	Nov. 13 to Nov. 19...	7	1,561	3,799	198	6	19	12	7.88	13.60	2.99	16.59
81	...do.....	832	2,873	3.45	Nov. 14 to Nov. 19...	6	1,048	3,078	205	7	25	4	5.11	8.57	1.95	10.52
82	...do.....	1,470	5,127	3.49	Nov. 15 to Nov. 20...	6	1,808	5,485	358	7	24	8	5.05	8.38	1.72	10.10
83	...do.....	1,470	5,044	3.43	Nov. 16 to Nov. 21...	6	1,749	5,435	391	8	27	11	4.47	7.45	1.39	8.84
84	...do.....	1,280	4,211	3.29	Nov. 17 to Nov. 22...	6	1,549	4,498	287	7	22	7	5.40	8.87	1.43	10.30
85	...do.....	896	3,281	3.66	Nov. 16 to Nov. 24...	9	1,595	3,523	242	7	27	3	6.59	10.48	1.81	12.29
86	...do.....	660	2,215	3.36	Nov. 17 to Nov. 24...	8	1,049	2,344	129	6	20	2	8.13	12.95	2.05	15.00
87	...do.....	1,270	4,570	3.60	Nov. 19 to Nov. 25...	7	1,816	4,866	296	7	23	11	6.14	9.44	1.33	10.77
88	...do.....	1,070	3,590	3.36	Nov. 22 to Nov. 28...	7	1,616	3,861	271	8	25	5	5.96	8.89	1.38	10.27

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